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FONDAZIONE ORDINE MAURIZIANO



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LOTTO A SCALA JUVARRIANA, GALLERIA E ATRIO DI PONENTE

COMMITTENZA E PROPRIETA':
FONDAZIONE ORDINE MAURIZIANO
Piazza Principe Amedeo, 7, Stupinigi, Nichelino (TO)
LEGALE RAPPRESENTANTE: Avv. Licia Mattioli

RESPONSABILE UNICO DEL PROGETTO:
ARCH. LUIGI VALDEMARIN

COORDINAMENTO E PROGETTAZIONE
ARCHITETTONICA E DI RESTAURO:
ARCH. CONS. CHIARA MOMO,
Corso Bernardino Telesio, 99, Torino
con PROF. ARCH. MAURIZIO MOMO,
Piazza Carlo Emanuele II, 17b, Torino

PROGETTAZIONE STRUTTURALE: ING. CHIAFFREDO NOVARESE,
Via Cuneo, 21, 12033 Moretta (Cn)

PROGETTAZIONE IMPIANTI FLUIDOMECCANICI: DOTT. ALBERTO MILANOLI
Corso Galileo Ferraris, 99, 10128 Torino

PROGETTAZIONE IMPIANTI ELETTRICI: PER.IND. MICHELE CARIA,
Via Reguzzoni, 19, 10094 Giaveno (To)

COORDINAMENTO SICUREZZA: ARCH. ROBERTO BAFFERT,
Corso Bernardino Telesio, 99, Torino

PROGETTO ESECUTIVO

OGGETTO: CAPITOLATO SPECIALE D'APPALTO
PARTE TECNICA

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1 GENERALITA'

Il presente capitolato tecnico tratta delle caratteristiche tecniche che dovranno avere le apparecchiature e materiali previsti per i lavori di realizzazione degli impianti elettrici e speciali a servizio dei locali dell'Ala di Ponente della Palazzina di Caccia di Stupinigi e più precisamente i locali denominati Scala Juvarriana di Ponente, Galleria e Atrio di Ponente del complesso sito in Piazza Principe Amedeo 7 Stupinigi nel Comune di Nichelino in Provincia di Torino.

Il presente capitolato tecnico riguarda gli impianti elettrici e speciali a servizio dei locali oggetto di intervento sopra riportati. Per i limiti di fornitura si rimanda agli elaborati grafici di progetto.

Nei successivi paragrafi verranno dettagliate le caratteristiche tecniche che dovranno avere le varie apparecchiature e materiali di cui è prevista l'installazione

2 SPECIFICHE TECNICHE RIGUARDANTI I MATERIALI

2.1 Qualità e provenienza dei materiali

Tutti i materiali elettrici di bassa tensione dovranno essere conformi alla direttiva 93/68 in materia di marcatura CE recepita dal Decreto Legislativo 25 novembre 1996 n° 626 pubblicato sul Supplemento ordinario della Gazzetta Ufficiale 14.12.1996.

Tutti i materiali previsti dovranno essere della migliore qualità in commercio, perfettamente idonei alle condizioni di impiego.

Dovrà essere pertanto precisata nell'offerta la casa costruttrice, il tipo, le prestazioni e caratteristiche principali relative ad ogni apparecchiatura e materiale che s'intende adottare.

I materiali dovranno avere il Marchio Italiano di Qualità e dovranno provenire da primarie Case Costruttrici.

Tutti i componenti degli impianti dovranno essere eseguiti con gli accorgimenti più perfezionati ed i sistemi costruttivi più aggiornati.

Essi dovranno essere conformi ai materiali e componenti indicati nella descrizione generale dell'impianto.

I manufatti lavorati dovranno essere protetti sia per il trasporto, sia per il periodo di immagazzinamento, sia a posa avvenuta fino ad occupazione dei locali.

La protezione dovrà dare una garanzia assoluta contro gli agenti atmosferici ed in special modo contro gli spruzzi di malte, vernici, calce, ecc.

Tutte le opere dovranno essere eseguite con materiali delle migliori qualità esistenti in commercio.

Le opere eseguite con le relative apparecchiature, dovranno rispondere perfettamente alle descrizioni della presente Relazione, alle caratteristiche indicate nella descrizione generale, ed essere esattamente conformi ed equivalenti ai campioni approvati dal Direttore dei Lavori.

Prima di procedere alla provvista del materiale occorrente all'impianto, dovrà essere presentata una campionatura completa di tutte le parti dell'impianto (tubi, conduttori e accessori, apparecchi illuminanti, interruttori, prese, ecc.) che dovranno essere preventivamente approvati dal Committente.

2.2 Generalità riguardanti i quadri elettrici

Le forniture dovranno comprendere tutti i materiali, apparecchiature principali e ausiliarie occorrenti a rendere i quadri completi secondo le particolari esigenze funzionali del servizio cui sono destinati, indicate nella presente relazione tecnica e/o negli altri elaborati allegati alla richiesta di offerta.

Rientrano pertanto tra le forniture del Costruttore, anche se non espressamente indicati nei disegni del Committente, tutte le apparecchiature ausiliarie necessarie a realizzare gli automatismi prescritti, i soccorritori eventualmente occorrenti per la manovra dei comandi a forte assorbimento di corrente, i trasformatori ausiliari ed in genere ogni accessorio occorrente a rendere i quadri perfettamente funzionanti e finiti a regola d'arte in materia.

Per ciascun quadro dovrà essere fornita la documentazione di cui in appresso redatta in lingua italiana e con unità di misura del sistema metrico decimale:

- disegni quotati di ingombro con vista frontale e laterale
- disegni costruttivi e sezioni in scala del quadro e dei vari scomparti completi di riferimenti e legenda delle apparecchiature, diciture delle targhette
- disegni dei ferri di base, con l'indicazione delle forature delle solette e/o dei cunicoli
- schema unifilare topografico

- schema tripolare strutturale completo
- schema di montaggio completo
- schema funzionale completo
- libretto di istruzione delle apparecchiature
- elenco, completo di caratteristiche e casa costruttrice, di tutte le apparecchiature
- diagrammi illustranti l'organizzazione della protezione selettiva

Per quanto concerne gli elaborati tecnici, si rimanda alla documentazione tecnica allegata alla presente relazione tecnica. Si intende comunque sin d'ora che i rimanenti elaborati non allegati a questa relazione tecnica dovranno essere forniti dal Costruttore.

Il costruttore dovrà altresì completare ed aggiornare anche gli elaborati forniti dal Committente, in maniera che essi risultino in tutto rispondenti ai quadri nella loro edizione definitiva all'atto della consegna. Gli elaborati eseguiti dal Costruttore dovranno essere di volta in volta, ed in tempo utile, sottoposti all'approvazione del Committente.

Il Committente si riserva il diritto di chiedere ed il Costruttore dovrà eseguire senza alcun compenso quelle varianti di sistemazione o di schema che, senza alterare lo standard del Costruttore, migliorino, ad esclusivo giudizio del Committente, la funzionalità o l'estetica dei quadri.

Il Costruttore dovrà essere responsabile degli errori ed omissioni nei disegni e negli schemi da lui eseguiti, anche se conseguenti ad errori od omissioni palesi risultanti da informazioni, disegni e schemi forniti dal Committente. Il Costruttore pertanto dovrà eseguire gratuitamente le modifiche e correzioni necessarie degli errori ed omissioni rilevanti prima della spedizione dei quadri dalle Officine del Costruttore.

Le correzioni di cui sopra non comprendono ovviamente i difetti di costruzione ricoperti dalla clausola di garanzia stabilita in altri documenti.

Il Costruttore dovrà fornire inoltre una copia riproducibile e due copie normali, racchiuse in custodia plastica trasparente, che dovranno essere sistemate all'interno del quadro entro apposita tasca metallica.

2.3 Apparecchiature modulari per quadri

Gli apparecchi elettrici, il cui tipo e proporzionamento sono indicati sui disegni allegati, dovranno rispondere alle seguenti prescrizioni generali:

Interruttore di manovra-sezionatore modulare

Questi apparecchi sono destinati alla apertura ed alla chiusura sotto carico di circuiti già protetti contro le sovracorrenti; in particolare vengono impiegati come interruttori generali nei quadri.

Caratteristiche tecniche:

- corrente nominale secondo le indicazioni delle tavole di progetto;
- durata elettrica 30.000 cicli AC22;
- durata meccanica 300.000 cicli;
- collegamento con morsetti a gabbia per conduttori fino a mmq. 50;
- corrente di breve durata ammissibile di almeno $20 \cdot I_n$ per 1 secondo;
- fissaggio a scatto su guida DIN;
- ingombro di 1 modulo DIN (mm. 17,5) per polo;
- profondità di incasso mm. 58;
- normativa di riferimento: IEC 408.

Interruttore automatico magnetotermico modulare

Questi apparecchi sono destinati alla protezione contro le sovracorrenti dei circuiti posti a valle.

Caratteristiche tecniche:

- corrente nominale secondo le indicazioni delle tavole di progetto;
- curve di intervento tipo C o tipo D secondo IEC 947.2
- durata elettrica 20.000 cicli O-C;
- potere di interruzione minimo secondo le indicazioni delle tavole di progetto;
- collegamento con morsetti a gabbia per conduttori fino a mmq. 25 per I_n fino a 25A, e fino a mmq. 35 per I_n fino a 63A;
- fissaggio a scatto su guida DIN;
- sezionamento visualizzato; - esecuzione tropicalizzata;
- ingombro di 1 modulo DIN (mm. 17,5) per polo; profondità mm. 68;
- normativa di riferimento: IEC 947-2.

Interruttore automatico magnetotermico e differenziale ad alta sensibilità modulare

Questo apparecchio è destinato alla protezione contro le sovracorrenti dei circuiti posti a valle, alla protezione delle persone contro i contatti indiretti ed alla protezione complementare delle persone contro i contatti diretti.

Caratteristiche tecniche della componente magnetotermica:

- corrente nominale secondo le indicazioni delle tavole di progetto;
- curve di intervento tipo C o tipo D secondo IEC 947.2
- durata elettrica 20.000 cicli O-C;
- potere di interruzione minimo secondo le indicazioni delle tavole di progetto;
- collegamento con morsetti a gabbia per conduttori fino a mmq. 25 per I_n fino a 25A, e fino a mmq. 35 per I_n fino a 63A;
- fissaggio a scatto su guida DIN;
- sezionamento visualizzato;
- visualizzazione dell'intervento;
- esecuzione tropicalizzata;
- profondità di incasso mm. 58;
- normativa di riferimento: IEC 947-2.

Caratteristiche tecniche della componente differenziale:

- differenziale di tipo "AC" per corrente alternata;
- protezione contro gli scatti intempestivi dovuti a sovratensioni transitorie;
- soglia di intervento differenziale fissa correnti di intervento pari a 500mA, 300mA e 30mA;
- visualizzazione dell'intervento;
- riarmo manuale;
- collegamento con morsetti a gabbia per conduttori fino a mmq. 35;
- profondità di incasso mm. 58.
- Qualora l'apparecchio sia realizzato con l'associazione di un interruttore magnetotermico con un blocco differenziale, deve essere assicurata l'inviolabilità dell'insieme.

Contattore modulare

L'apparecchio viene utilizzato per il telecomando di circuiti luce e FM, anche in caso di elevata frequenza di manovra.

La chiusura dei contatti di potenza avviene alla messa in tensione della bobina; alla diseccitazione si ripristina la condizione di apertura dei contatti.

Caratteristiche tecniche:

- corrente nominale da 16A fino a 63A;
- esecuzione ad 1, 2, 3 o 4 poli;
- collegamento con morsetti a gabbia per conduttori fino a mmq. 4 per In fino a 20A, e fino a mmq. 16 per In fino a 63A;
- visualizzazione dello stato della bobina;
- tensione di comando 24Vca o 220Vca;
- fissaggio a scatto su guida DIN;
- profondità di incasso mm. 58;
- normativa di riferimento: IEC 158-1.

Rele' passo passo modulare

L'apparecchio viene utilizzato per il telecomando di circuiti luce.

L'apertura e la chiusura avvengono alla messa in tensione temporanea della bobina ottenuta per mezzo di un pulsante di comando, e sono mantenute meccanicamente.

Caratteristiche tecniche:

- corrente nominale 16A o 25A;
- esecuzione ad 1, 2, 3 o 4 poli;
- collegamento con morsetti a gabbia per conduttori fino a mmq. 10;
- possibilità di comando diretto manuale;
- visualizzazione dello stato dei contatti;
- tensione di comando 24Vca o 220Vca;
- fissaggio a scatto su guida DIN; - profondità di incasso mm. 58;
- normativa di riferimento: IEC 669-1/669-2.

2.4 Tubazioni e cassette in materiale plastico

Tubo portacavi rigido isolante per filettatura metrica.

Ne è previsto l'impiego in tutti gli impianti il cui grado di protezione deve essere superiore ad IP40; l'elevata resistenza allo schiacciamento ne permette l'uso in sostituzione del tubo metallico nelle centrali tecnologiche, nelle autorimesse ed in ambienti simili.

Caratteristiche tecniche:

- resistenza allo schiacciamento 400 Kg su 1 dm. lineare;
- grado di protezione IP55 con gli appositi manicotti e curve filettati;
- adatto per temperatura ambiente permanente di 50°C;
- autoestinguente e non propagante;
- rigidità dielettrica superiore a 2kV;
- filettatura metrica;
- colore grigio RAL 7035;
- diametri standard da mm. 16 a mm. 50;
- normativa di riferimento: CEI 23-8.

Tubo Portacavi Flessibile con Anima di Rinforzo Isolante

Guaina flessibile in PVC con spirale antischiacciamento in PVC rigido antiurto, superficie interna liscia.

Caratteristiche tecniche:

- guaina in PVC flessibile
- spirale in PVC rigido
- resistenza allo schiacciamento 350N su 5 cm. lineari a +20°C;
- autoestinguenza in meno di 30 secondi, classe VO secondo UL94;
- rigidità dielettrica superiore a 2kV;
- grado di protezione IP55 ottenuto con gli appositi raccordi.
- temperatura di esercizio da -20°C a +70°C;
- colore grigio RAL 7035;

Tubo Portacavi Rigido Isolante di Tipo Pesante

Ne è previsto l'impiego per posa incassata o per posa a vista.

Caratteristiche tecniche:

- resistenza allo schiacciamento 750N su 5cm. lineari a 20°C;

- resistenza all'urto a freddo (-5°C) da 0,5 a 2 J;
- resistenza a temperature fra -5°C e +60°C;
- curvabilità a freddo con raggio minimo pari a 3 diametri;
- grado di protezione IP40 con manicotti e curve normali impiegati senza collanti;
- autoestinguente in meno di 30 secondi;
- rigidità dielettrica superiore a 2kV;
- resistenza di isolamento superiore a 100MOhm;
- colore grigio RAL 7035 o nero;
- piegabile a temperatura ambiente con molla piegatubo;
- diametri standard da mm. 16 a mm. 50;
- con Marchio Italiano di Qualità IMQ
- normativa di riferimento: CEI 23-8/Tabella UNEL 37118/72.

Tubo Portacavi Flessibile Isolante di Tipo Pesante

Ne è previsto l'impiego per posa incassata a parete o sotto pavimento.

Caratteristiche tecniche:

- resistenza allo schiacciamento 750N su 5cm. lineari a 20°C;
- resistenza all'urto a freddo (-5°C) da 0,5 a 2 J;
- curvabilità a freddo con raggio minimo pari a 3 diametri;
- autoestinguente in meno di 30 secondi;
- resistenza a temperature fra -5°C e +60°C;
- rigidità dielettrica superiore a 2kV;
- resistenza di isolamento superiore a 100MOhm;
- colore nero;
- diametri standard da mm. 16 a mm. 63;
- con Marchio Italiano di Qualità IMQ
- normativa di riferimento: CEI 23-14/Tabella UNEL 37121/70.

Cassetta di Derivazione in Resina, da Parete

Cassetta di derivazione in resina per montaggio sporgente a parete, da impiegare negli impianti realizzati con tubazione isolante posata in vista.

Caratteristiche tecniche:

- corpo in materiale isolante autoestinguente (resistente alla prova del filo incandescente a temperatura superiore a 650°C);
- resistenza al riscaldamento a temperatura superiore a 70°C;
- esecuzione con pareti piene o forate con pressacavi;
- coperchio fissato a pressione rimovibile con attrezzo o con viti;
- grado di protezione minimo IP44 con i pressacavi di serie;
- fondo provvisto di guide per il fissaggio di morsettiere ed accessori;
- possibilità di montaggio di pressacavi filettati con grado di protezione fino ad IP66;
- possibilità di accoppiamento ad altre cassette o a canaline con apposito raccordo stagno dotato di guarnizione, dado e controdado;

Cassetta di Derivazione in Resina, da Incasso

Cassetta di derivazione in resina per montaggio incassato a parete, da impiegare negli impianti realizzati con tubazione isolante posata incassata.

Caratteristiche tecniche:

- corpo in polistirolo isolante autoestinguente (resistente alla prova del filo incandescente a temperatura superiore a 650°C);
- resistenza al riscaldamento a temperatura superiore a 70°C;
- coperchio piano di polistirolo colore avorio fissato con viti;
- possibilità di montaggio di coperchio antiurto in policarbonato;
- struttura rigida autoportante con anello di rinforzo e di riferimento per l'incasso;
- grado di protezione minimo IP40;
- fondo provvisto di guide per il fissaggio di morsettiere, separatori isolanti ed accessori;

2.5 Cavi per bassa tensione generalità

Il tipo, le caratteristiche e la formazione dei cavi da impiegare sono indicati sulle tavole di progetto.

Alla partenza ciascun cavo sarà direttamente attestato ai codoli di uscita del corrispondente interruttore, ogni cavo in arrivo verrà allacciato direttamente ai morsetti di entrata del corrispondente interruttore sul quadro di arrivo.

Durante il percorso non saranno eseguite curve con raggio inferiore al minimo ammesso, e non saranno eseguite giunzioni sui cavi.

La posa sarà ordinata, senza incroci o sovrapposizioni; nei tratti verticali i cavi saranno fissati con morsetti reggicavo amagnetici, e nei percorsi orizzontali con fascettatura.

In corrispondenza delle due estremità, ad ogni cambio di direzione o comunque al massimo ogni m. 20 di percorso, su ciascun cavo verrà collocato un cartellino di identificazione con scritta indelebile.

L'esecuzione delle linee di energia in cavo sarà conforme alle Norme CEI 11-17 Fascicolo 558.

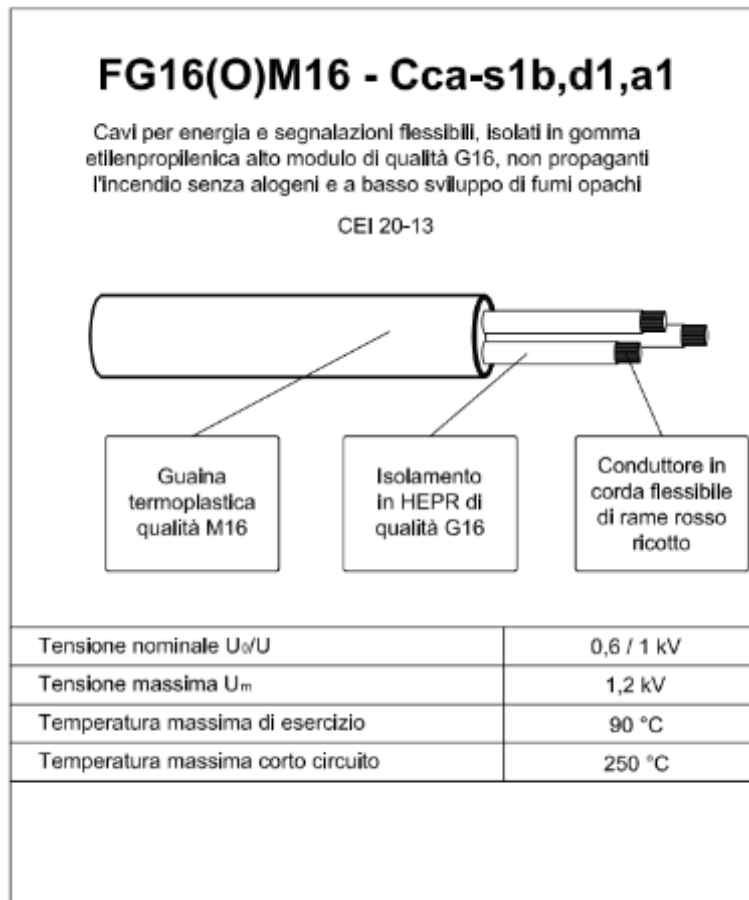
Nei punti in cui le canalizzazioni attraverseranno compartimentazioni antincendio, verrà confezionato un setto taglia fuoco con caratteristiche REI uguali a quelle della muratura utilizzando lastre, mastici ed accessori previsti per questo specifico impiego.

Il sistema utilizzato dovrà essere certificato dal Ministero dell'Interno-CSE o da altro laboratorio riconosciuto.

2.5.1 Cavi isolamento 0,6/1KV tipo FG16(O)M16

Cavi per energia e segnalazione flessibili, isolati in gomma etilenpropilenica alto modulo di qualità, non propaganti l'incendio senza alogeni e a basso sviluppo di fumi opachi.

Particolarmente indicati in luoghi a rischio d'incendio e con elevata presenza di persone dove è fondamentale garantirne la salvaguardia e preservare gli impianti e le apparecchiature dall'attacco dei gas corrosivi (uffici, scuole, supermercati, cinema, teatri, discoteche ecc.) per impiego all'interno in locali anche bagnati o all'esterno. Adatto per posa fissa su murature e strutture metalliche in aria libera, in tubo o canaletta o sistemi similari. Ammessa anche la posa interrata. (rif. CEI 20-67)



2.5.1 Cavi isolamento 0,6/1KV tipo FTG18(O)M16 PH120/F120

Cavi per energia, segnalamento e comando, resistenti al fuoco, non propaganti l'incendio e senza alogeni

Idonei per posa fissa all'interno e all'esterno in ambienti anche bagnati. Possono essere installati su murature e strutture metalliche, su passerelle, tubazioni, canalette e sistemi simili. Ammessa la posa interrata diretta o indiretta. Adatti al trasporto di energia e alla trasmissione di segnali e comandi per impianti elettrici in luoghi in cui è fondamentale in caso d'incendio limitare al minimo gli effetti della propagazione dello stesso ed è elevato il rischio per le emissioni di fumo ed acidità nei riguardi di persone o beni. Adatti ad esempio per luci di emergenza e di allarme, rivelazione automatica dell'incendio, dispositivi di spegnimento incendio, apertura porte automatiche, sistemi di elevazione, sistemi di aerazione e di condizionamento, sistemi telefonici di emergenza, impianti di aerostazioni, gallerie stradali, stazioni ferroviarie, stazioni marittime e metropolitane.

FTG18(O)M16 - B2ca-s1a,d1,a1

Cavi per energia e segnalazioni flessibili, isolati con mescola elastomerica di qualità G18, con caratteristiche aggiuntive di funzionamento in presenza di fuoco e shock meccanico per 120min a 830°C

CEI 20-45 V2 / IEC 60502-1 / CEI EN 50200 / CEI EN 50362 / CEI 20-36/4-0/5-0 / EN/IEC 60331 / EN 50575:2014 + EN 50575/A1:2016 / EN/IEC 60332-1-2



Guaina termoplastica LSZH qualità M16	Riempitivo in materiale non fibroso e non igroscopico	Isolamento con mescola elastomerica qualità G18	Barriera antifuoco in mica	Conduttore in corda flessibile di rame rosso ricotto classe 5
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Tensione nominale U_0/U	0,6 / 1 kV
Tensione massima U_m	1,2 kV
Temperatura massima di esercizio	90 °C
Temperatura massima corto circuito	250 °C

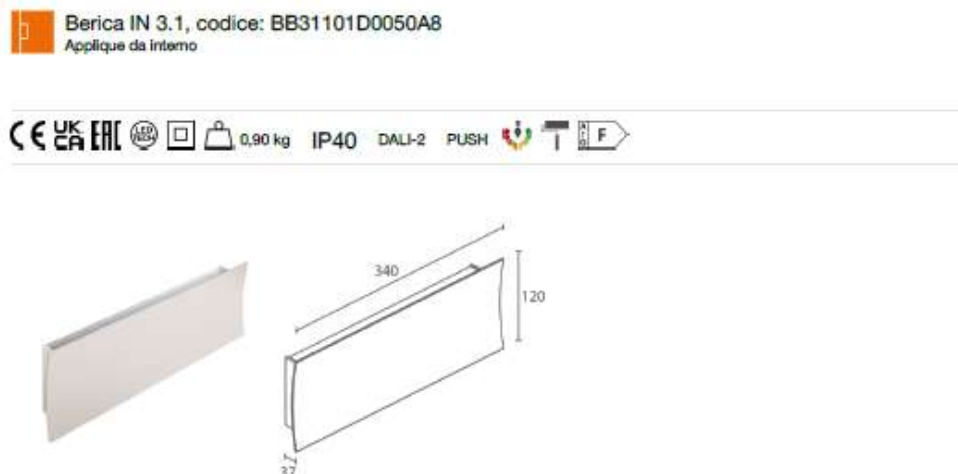
2.6 Corpi illuminanti

Sono previsti varie tipologie di corpi illuminanti a seconda delle esigenze. Nei successive capitoli si riportano le specifiche tecniche dei vari corpi illuminanti previsti a Progetto, con relative schede tecniche che dovranno essere rispettate con prodotti eventualmente simili ed equivalenti.

Similiari come forma e caratteristiche estetiche avendo la valenza architettonica notevole importanza vista la tipologia di intervento e equivalenti al fine di garantire le pari caratteristiche luminose al fine di garantire i valori di illuminamento previsti a Progetto e richiesti dalla normativa vigente.

2.6.1 Corpo illuminante tipo applique da interno

Corpo illuminante tipo applique da interno di varie potenze e vari formati a seconda delle necessità, con caratteristiche similari e equivalenti.



DESCRIZIONE

applique da interno, biemissione; su superficie (soffitto, parete); Potenza assorbita: 27W; Alimentazione: 230Vac; Flusso sorgente: 3280 lm (3000K); Flusso emesso: 2728 lm (3000K, ottica diffusa); 64 mid power LED, 3 step MacAdam, 50000h L80 B10 (Ta 25°C); Colore LED: 3000K; Ottiche: asimmetriche: sistema ottico composto da lente lineare in PMMA ad alta efficienza realizzata tramite processo di estrusione; CRI indice resa cromatica: >90; Materiale corpo: corpo e frontale concavo in lega di alluminio ANTICORODAL EN AW 6060 T5 a basso contenuto di rame per un'ottima resistenza alla corrosione. Corpo e frontale concavo realizzati con processo di estrusione successivamente rifiniti tramite lavorazione fresatura CNC. Testate realizzate in policarbonato tramite processo di stampaggio progettate per seguire il profilo curvo del frontale; Finiture: corpo verniciato bianco (RAL 9003), frontale e testate verniciati con primer che permette di dipingere l'apparecchio con vernici quali smalti poliuretani bicomponenti e vernici acriliche bicomponenti adatte a superfici murarie; Finitura RAL su richiesta; alimentatore integrato; Gestione: PUSH, DALI-2; Grado di protezione: IP40; su richiesta disponibile con lunghezza diversa da quelle standard (max 1100mm), su richiesta disponibile la versione monoemissione; Le vernici utilizzabili sui corpi illuminanti trattati con primer sono quelle adatte all'utilizzo su superfici murarie, ossia: smalti poliuretani bicomponenti, vernici acriliche bicomponenti; Temperatura di esercizio: 0°C — +45°C; Glow wire test: 650°C; Sicurezza fotobiologica: conforme a IEC TR 62778:2014; Classe di isolamento: classe II; Peso: 900 g; Dimensioni: 340x120x37 mm; Classe di consumo energetico: F (sorgente luminosa) in accordo con UE 2019/2015; Testato e approvato tramite E.O.L. test (End Of Line test) con prova di funzionamento e verifica dei parametri elettrici di assorbimento.

SCHEDA TECNICA

BERICA IN 3.1. CODICE: BB31101D0050A8

DATI FOTOMETRICI

DATI FOTOMETRICI

A - Asymmetrical

H (m)	Φ (m)	Φ (m)	Φ (m)
0.50	0.46	1.02	2929
1.00	0.91	2.05	712
1.50	1.37	3.07	325
2.00	1.82	4.10	183
2.50	2.28	5.12	117
3.00	2.73	6.14	81



asymmetrical

Le informazioni contenute nel presente documento possono essere modificate in qualsiasi momento senza preavviso e non comportano l'assunzione, nemmeno implicita, di alcuna obbligazione da parte di L&L LucidiLight srl

SCHEDA TECNICA

BERICA IN 3.1. CODICE: BB31101D0050A8

DATI TECNICI

CARATTERISTICHE ELETTRICHE

Potenza assorbita	27W
Alimentazione	230Vac
Alimentatore	alimentatore integrato
Gestione	PUSH, DALI-2

CARATTERISTICHE ILLUMINOTECNICHE


Numero e tipo LED	64 mid power LED
Durata media LED	50000h L80 B10 (Ta 25°C)
Colore LED	3000K
CRI Indice resa cromatica	>90
Binning	3 step MacAdam
Ottiche	asimmetrica
Flusso sorgente	3280 lm (3000K)
Flusso emesso	2728 lm (3000K, ottica diffusa)

CARATTERISTICHE MECCANICHE












Dimensioni	340x120x37 mm
Peso	900 g
Finiture	primer
Fissaggio	con viti e tasselli
Materiale corpo	corpo e frontale in alluminio anticorrosione

CARATTERISTICHE GENERALI

Grado di protezione	IP40
Temperatura di esercizio	0°C — +45°C
Classe di consumo energetico	F (sorgente luminosa) in accordo con UE 2019/2015
Glow wire test	650°C
Classe di isolamento	classe II
Calpestabile	no
Carrabile	no
Sicurezza fotobiologica	conforme a IEC TR 62778:2014
Note	su richiesta disponibile con lunghezza diversa da quelle standard (max 1100mm), su richiesta disponibile la versione monocolor; Le vernici utilizzabili sui corpi illuminanti trattati con primer sono quelle adatte all'utilizzo su superfici murarie, ossia: smalti poliuretanici bicomponenti, vernici acriliche bicomponenti

 Berica IN 3.2, codice: BB32101D0050A8
Applique da interno

2019/2020 Piva. 10

      1,60 kg  IP40  DALI-2  PUSH   F



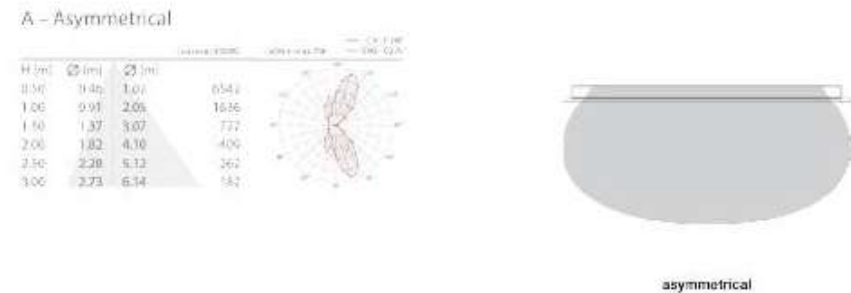
DESCRIZIONE

applique da interno, biemissione; su superficie (soffitto, parete); Potenza assorbita: 54W; Alimentazione: 230Vac; Flusso sorgente: 6580 lm (3000K); Flusso emesso: 5456 lm (3000K, ottica diffusa); 128 mid power LED, 3 step MacAdam, 50000h L80 B10 (Ta 25°C); Colore LED: 3000K; Ottiche: asimmetrica: sistema ottico composto da lente lineare in PMMA ad alta efficienza realizzata tramite processo di estrusione; CRI indice resa cromatica: >90; Materiale corpo: corpo e frontale concavo realizzati con processo di estrusione successivamente rifiniti tramite lavorazione fresatura CNC. Testate realizzate in policarbonato tramite processo di stampaggio progettate per seguire il profilo curvo del frontale; Finiture: corpo verniciato bianco (RAL 9003), frontale e testate verniciati con primer che permette di dipingere l'apparecchio con vernici quali smalti poliuretanici bicomponenti e vernici acriliche bicomponenti adatte a superfici murarie; Finitura RAL su richiesta; alimentatore integrato; Gestione: PUSH, DALI-2; Grado di protezione: IP40; su richiesta disponibile con lunghezza diversa da quelle standard (max 1100mm), su richiesta disponibile la versione monoemissione; Le vernici utilizzabili sui corpi illuminanti trattati con primer sono quelle adatte all'utilizzo su superfici murarie, ossia: smalti poliuretanici bicomponenti, vernici acriliche bicomponenti; Temperatura di esercizio: 0°C — +45°C; Glow wire test: 650°C; Sicurezza fotobiologica: conforme a IEC TR 62778-2014; Classe di isolamento: classe II; Peso: 1600 g; Dimensioni: 620x120x37 mm; Classe di consumo energetico: F (sorgente luminosa) in accordo con UE 2019/2015; Testato e approvato tramite E.O.L. test (End Of Line test) con prova di funzionamento e verifica dei parametri elettrici di assorbimento.

SCHEDA TECNICA
DATI FOTOMETRICI

BERICA IN 3.2. CODICE: BB32101D0050A8

DATI FOTOMETRICI



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**SCHEDA TECNICA
DATI TECNICI**

BERICA IN 3.2. CODICE: BB32101D0050A8

CARATTERISTICHE ELETTRICHE

Potenza assorbita	54W
Alimentazione	230Vac
Alimentatore	alimentatore integrato
Gestione	PUSH, DALI-2

CARATTERISTICHE ILLUMINOTECNICHE


Numero e tipo LED	128 mid power LED
Durata media LED	50000h L80 B10 (Ta 25°C)
Colore LED	3000K
CRI Indice resa cromatica	>90
Binning	3 step MacAdam
Ottiche	asimmetrica
Flusso sorgente	6560 lm (3000K)
Flusso emesso	5456 lm (3000K, ottica diffusa)

CARATTERISTICHE MECCANICHE

Dimensioni	620x120x37 mm
Peso	1600 g
Finiture	primer
Fissaggio	con viti e tasselli
Materiale corpo	corpo e frontale in alluminio anticorrosione

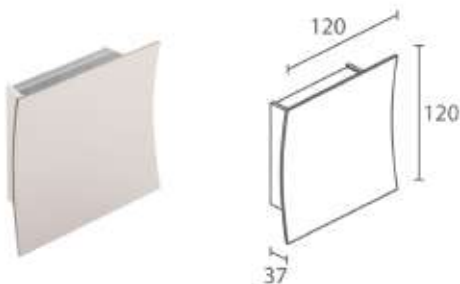
CARATTERISTICHE GENERALI

Grado di protezione	IP40
Temperatura di esercizio	0°C — +45°C
Classe di consumo energetico	F (sorgente luminosa) in accordo con UE 2019/2015
Glow wire test	650°C
Classe di isolamento	classe II
Calpestabile	no
Carrabile	no
Sicurezza fotobiologica	conforme a IEC TR 62778:2014
Note	su richiesta disponibile con lunghezza diversa da quelle standard (max 1100mm), su richiesta disponibile la versione monoemissione; Le vernici utilizzabili sui corpi illuminanti trattati con primer sono quelle adatte all'utilizzo su superfici murarie, ossia: smalti poliuretanici bicomponenti, vernici acriliche bicomponenti

 Berica IN 3.0, codice: BB3010100050A8
Appique da interno

18/01/2025 Rev. 10/20

      0,35 kg        



DESCRIZIONE
applique da interno, biemissione; su superficie (soffitto, parete); Potenza assorbita: 8W; Alimentazione: 230Vac; Flusso sorgente: 820 lm (3000K); Flusso emesso: 682 lm (3000K, ottica diffusa); 16 mid power LED, 3 step MacAdam, 50000h L80 B10 (Ta 25°C); Colore LED: 3000K; Ottiche: asimmetrica; sistema ottico composto da lente lineare in PMMA ad alta efficienza realizzata tramite processo di estrusione; CRI indice resa cromatica: >90; Materiale corpo: corpo e frontale concavo in lega di alluminio ANTICORODAL EN AW 6060 T5 a basso contenuto di rame per un'ottima resistenza alla corrosione. Corpo e frontale concavo realizzati con processo di estrusione successivamente rifiniti tramite lavorazione fresatura CNC. Testate realizzate in policarbonato tramite processo di stampaggio progettate per seguire il profilo curvo del frontale; Finiture: corpo verniciato bianco (RAL 9003), frontale e testate verniciati con primer che permette di dipingere l'apparecchio con vernici quali smalti poliuretanici bicomponenti e vernici acriliche bicomponenti adatte a superfici murarie; Finitura RAL su richiesta; alimentatore integrato; Grado di protezione: IP40; su richiesta disponibile con lunghezza diversa da quelle standard (max 1100mm), su richiesta disponibile la versione monoemissione, su richiesta disponibile la versione con gestione Casambi, controllabile tramite app Casambi; Le vernici utilizzabili sui corpi illuminanti trattati con primer sono quelle adatte all'utilizzo su superfici murarie, ossia: smalti poliuretanici bicomponenti, vernici acriliche bicomponenti; Temperatura di esercizio: 0°C – +45°C; Glow wire test: 850°; Sicurezza fotobiologica: conforme a IEC TR 62778:2014; Classe di isolamento: classe II; Peso: 350 g; Dimensioni: 120x120x37 mm; Classe di consumo energetico: F (sorgente luminosa) in accordo con UE 2019/2015; Testato e approvato tramite E.O.L. test (End Of Line test) con prova di funzionamento e verifica dei parametri elettrici di assorbimento.

SCHEDA TECNICA
DATI FOTOMETRICI

BERICA IN 3.0. CODICE: BB3010100050A8

DATI FOTOMETRICI

A – Asymmetrical

H (m)	Ø (m)	Ø (m)	lm
0.50	0.45	1.02	818
1.00	0.91	2.05	204
1.50	1.37	3.07	91
2.00	1.82	4.10	51
2.50	2.28	5.12	33
3.00	2.73	6.14	23



asymmetrical

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SCHEDA TECNICA

DATI TECNICI

BERICA IN 3.0. CODICE: BB3010100050A8

CARATTERISTICHE ELETTRICHE

Potenza assorbita

8W

Alimentazione

230Vac

Alimentatore

alimentatore integrato

CARATTERISTICHE ILLUMINOTECNICHE

Numero e tipo LED

16 mid power LED

Durata media LED

50000h L80 B10 (Ta 25°C)

Colore LED

3000K

CRI Indice resa cromatica

>90

Binning

3 step MacAdam

Ottiche

asimmetrica

Flusso sorgente

820 lm (3000K)

Flusso emesso

682 lm (3000K, ottica diffusa)

CARATTERISTICHE MECCANICHE

Dimensioni

120x120x37 mm

Peso

350 g

Finiture

primer

Fissaggio

con viti e tasselli

Materiale corpo

corpo e frontale in alluminio anticorrosione

CARATTERISTICHE GENERALI

Grado di protezione

IP40

Temperatura di esercizio

0°C — +45°C

Classe di consumo energetico

F (sorgente luminosa) in accordo con UE 2019/2015

Glow wire test

650°

Classe di isolamento

classe II

Calpestabile

no

Carrabile

no

Sicurezza fotobiologica

conforme a IEC TR 62778:2014

Note

su richiesta disponibile con lunghezza diversa da quelle standard (max 1100mm), su richiesta disponibile la versione monoemissione, su richiesta disponibile la versione con gestione Casambi, controllabile tramite app Casambi; Le vernici utilizzabili sui corpi illuminanti trattati con primer sono quelle adatte all'utilizzo su superfici murarie, ossia: smalti poliuretatici bicomponenti, vernici acriliche bicomponenti

2.6.2 Corpo illuminante tipo profilo lineare

Corpo illuminante tipo profilo lineare con caratteristiche simili e equivalenti.

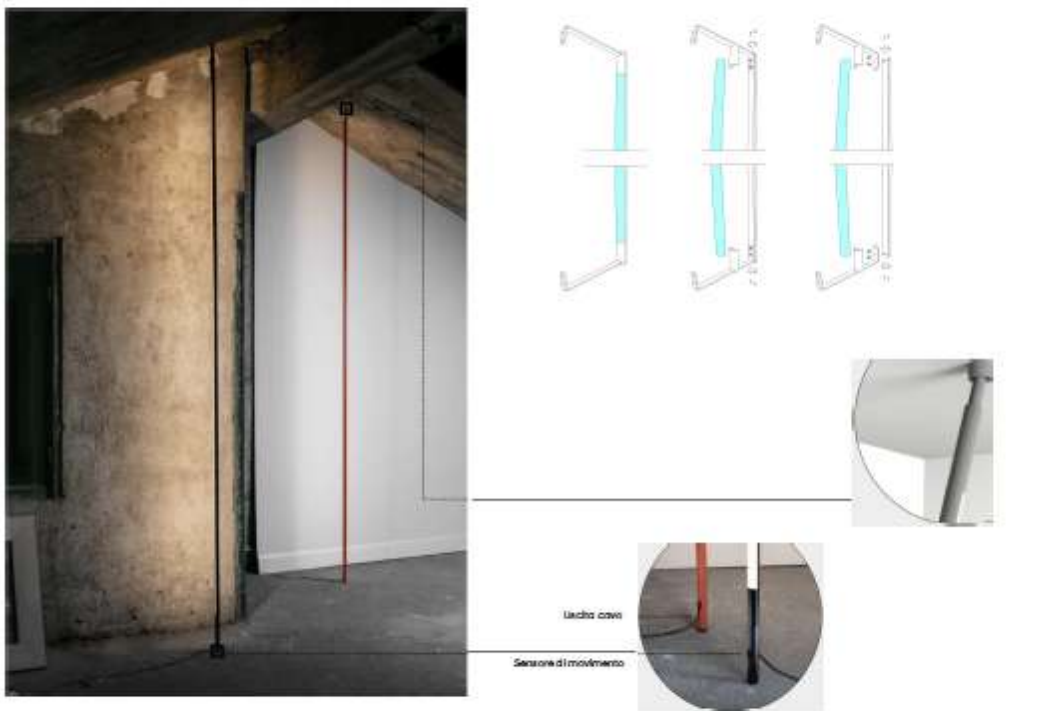
Verticale



Verticale



DATI TECNICI TECHNICAL DATA			
	270 cm	300 cm	
Nominal LED Flux:	5120 lm	5700 lm	
Flux Tot:	4096 lm	4560 lm	
Output:	158 lm/W	158 lm/W	
CCT:	3000 K	3000 K	
CRI:	>90	>90	
Power:	12.0W/m	12.0W/m	
Power Tot:	32,4 W	36,0W	
Weight:	1,08 Kg	1,20 Kg	



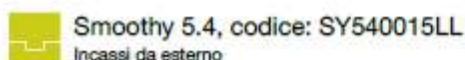
FINITURE / FINISHES



VERNICIATURA A POLVERE / POWDER COATING

2.6.3 Corpo illuminante tipo faretto da incasso per esterni

Corpo illuminante tipo faretto da incasso per esterni con caratteristiche simili e equivalenti.



DESCRIZIONE

Incasso da esterno; calpestabile; a incasso (soffitto, parete, pavimento); Potenza assorbita: 10W; Alimentazione: 24Vdc; Flusso sorgente: 900 lm (3000K, 10W, CRI >90); Flusso emesso: 645 lm (3000K, 38°, 10W, CRI >90); 1 COB LED High Density, 2 step MacAdam, 50000h L95 B10 (Ta 25°C); Colore LED: 3000K; Ottiche: 38°; CRI Indice resa cromatica: >90; Materiale corpo: corpo realizzato in lega di alluminio ANTICORODAL 6082, ricavato completamente da lavorazione tornitura CNC e successivamente elettrocolorato nero. Ghiera in ottone ottenuta da lavorazione tornitura CNC; Finiture: ottone; Finitura RAL su richiesta; Materiale schermo: vetro extrachiaro trasparente di spessore 10 mm ad alta trasmittanza per garantire uniformità cromatica della luce e temprato per un'ottima resistenza ai graffi e agli urti; Guarnizioni: le guarnizioni in silicone ricotto garantiscono nel tempo una massima resistenza ai raggi UV e una inalterabilità delle caratteristiche meccaniche; Spessore della superficie d'incasso: min 0 mm, max 25 mm; alimentatore non incluso; incluso cavo in neoprene di 1,50 m H05RN-F 2x0,75/0,75 Ø6,3 mm; Grado di protezione: IP65, IP67; Grado di resistenza: IK08; ottica 16°x69° orientabile di 360° mediante magnete in dotazione; su richiesta disponibile la versione con ottica 8° e potenza 10W; gestione Casambi e controllo tramite app Casambi con elettronica dedicata; Sistemi di protezione: IPS (Intelligent Protection System) protegge gli apparecchi illuminanti da infiltrazioni d'acqua che possono verificarsi in caso di errori di giunzione tra i cavi per applicazioni da esterno e immersione. Questa innovazione brevettata da L&L garantisce inoltre protezione elettrica da inversione di polarità, hotplug, ESD e sovratensioni che possono verificarsi in caso di malfunzionamenti dell'impianto elettrico; Temperatura di esercizio: -20°C — +45°C; Temperatura massima apparecchio: 50°C (Ta 25°C); Glow wire test: 960°; Sicurezza fotobiologica: gruppo rischio 1 secondo EN 62471:2006; Classe di isolamento: classe III; Peso: 900 g; Dimensioni: Ø109x72 mm; Foro d'incasso: Ø100 mm; Volume tecnico per dissipazione: Ø220x150 mm; Classe di consumo energetico: F (sorgente luminosa) in accordo con UE 2019/2015; Accessori: WC4050 Cassaforma, WE0702S Schermo antiabbagliamento, metà trasparente e metà serigrafato nero, WG0505 Molla di fissaggio Ø100mm, WH0206 Nido d'ape, WL0500 Ventosa; Testato e approvato tramite E.O.L. test (End Of Line test) con prova di funzionamento e verifica dei parametri elettrici di assorbimento.

SCHEDA TECNICA
DATI TECNICI

SMOOTHY 5.4, CODICE: SY540015LL

CARATTERISTICHE ELETTRICHE

Potenza assorbita	10W
Alimentazione	24Vdc
Alimentatore	alimentatore non incluso

CARATTERISTICHE ILLUMINOTECNICHE

Numero e tipo LED	1 COB LED High Density
Durata media LED	50000h L95 B10 (Ta 25°C)
Colore LED	3000K
CRI Indice resa cromatica	>90
Binning	2 step MacAdam
Ottiche	38°
Flusso sorgente	900 lm (3000K, 10W, CRI >90)
Flusso emesso	645 lm (3000K, 38°, 10W, CRI >90)

CARATTERISTICHE MECCANICHE

Dimensioni	Ø109x72 mm
Peso	900 g
Finiture	ottone
Fissaggio	con molle di fissaggio o con cassaforma
Materiale corpo	corpo in alluminio anticorrosione anodizzato nero, ghiera in ottone
Materiale schermo	schermo in vetro extrachiaro temprato trasparente
Foro d'incasso	Ø100 mm
Volume tecnico per dissipazione	Ø220x150 mm

CARATTERISTICHE GENERALI

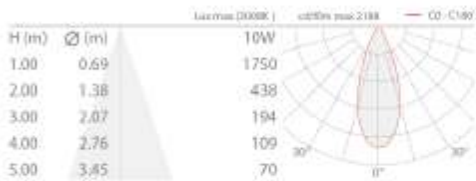
Grado di protezione	IP65, IP67
Temperatura di esercizio	-20°C — +45°C
Grado di resistenza	IK08
Caratteristiche	ottica 16°x69° orientabile di 360° mediante magnete in dotazione
Classe di consumo energetico	F (sorgente luminosa) in accordo con UE 2019/2015
Glow wire test	960°
Temperatura massima apparecchio	50°C (Ta 25°C)
Classe di isolamento	classe III
Calpestabile	sì
Carabile	no
Cavi di alimentazione	incluso cavo in neoprene di 1,50 m H05RN-F 2x0,75/0,75 Ø6,3 mm
Sistemi di protezione	IPS (Intelligent Protection System)
Sicurezza fotobiologica	gruppo rischio 1 secondo EN 62471:2006
Note	su richiesta disponibile la versione con ottica 8° e potenza 10W; gestione Casambi e controllo tramite app Casambi con elettronica dedicata

SCHEDA TECNICA
DATI FOTOMETRICI E ACCESSORI

SMOOTHY 5.4, CODICE: SY540015LL

DATI FOTOMETRICI

L - 38° CRI 80



ACCESSORI

Per installazione



WC4050
Cassaforma

Antiabbagliamento



WH0206
Nido d'ape
integrato nel corpo illuminante
Il nido d'ape è applicabile su tutte le ottiche ad eccezione delle ottiche
sharp, diffusa e 16°x69° orientabile
Da ordinare contestualmente all'apparecchio illuminante

Alimentatore dali:

AV0D024V03066

Technical data sheet - *Scheda tecnica*

DALI-2 Dimmable LED driver 30W LED driver
30W DALI-2 Dimmerabile

REV. 01 30/10/2024

AV0D024V03066 - 24Vdc - 30W DALI 2



Features

Output:	Constant Voltage
Range:	100-277VAC
PFC design:	Built-in active PFC function
Efficiency:	Up to 84%
Protections:	Short circuit/ over load/ over temperature
Heat dissipation:	Cooling by free air convection
Waterproof performance:	IP66 for indoor and outdoor
Dimming function:	DALI Protocol IEC62386; DIM
Dimming range:	0-100% dimming depth: 0.1%
PWM output:	Frequency 4K Hz, reaching the exemption level
NFC function	Adjust slightly, read & write output voltage, and set address
Application:	Suitable for LED lighting and moving sign applications

AV0D024V03066

Technical data sheet - Scheda tecnica

DALI-2 Dimmable LED driver 30W LED driver
30W DALI-2 Dimmerabile

Specification

Model		AV0D024V03066
Certificate		UL (pending) / cUL (pending) / FCC (pending) / (ENEC pending) / SAA / CE / CB / RoHS
Output	DC Voltage	24V (24-26V adjust by NFC)
	Voltage Tolerance	±0.2V
	Voltage Regulation	±0.5%
	Rated current	1.25A
	Rated power	30W
	Load Regulation	1%
	Standby power	≤ 0.5W @120VAC & @230VAC
Input	Voltage Range	100-277VAC
	Frequency Range	47 - 63Hz
	Power Factor (Typ.)	PF≥0.98@120VAC PF≥0.98@230VAC PF≥0.95@277VAC
	THD(Typ.) @ full load	≤10%@120VAC ≤10%@230VAC ≤15%@277VAC
	Efficiency(Typ.) @ full load	82%@120VAC 84%@230VAC 84%@277VAC
	AC Current (Max.)	0.42A
	Inrush Current (Typ.)	10.4A , 204us@50%120VAC 32A ,132us@50%230VAC 28A, 212us@50%277VAC
	Leakage current	<0.5mA
Protection	Short Circuit	Hiccup mode, recover automatically after fault condition is removed
	Over Load	≤120%, hiccup mode, recover automatically after fault condition is removed
	Over temperature	Shell surface temp.100℃±10℃, output will be off; recovers automatically after temp. drops.
Environment	Working TEMP.	-40~+60℃ (see below derating curve)
	Working Humidity	20 - 95%RH non-condensing
	Storage TEM.,Humidity	-40 - +80℃,10 - 95% RH non-condensing
	TEMP.coefficient	±0.03%/℃(0 - 50℃)
	Vibration	10~500Hz, 5G 12min./1 cycle, period for 72min. each along X,Y,Z axes
Safety & EMC	Safety standards	EN61347-1 EN61347-2-13 (EU) & UL8750 UL1310 (US)
	Withstand voltage	I/P-O/P:3.75KVAC I/P-FG:1.88KVAC O/P-FG:0.5KVAC (EU) I/P-O/P:1.8KVAC I/P-FG:1.8KVAC O/P-FG:1.8KVAC (US)
	Isolation resistance	I/P-O/P: 100MΩ / 500VDC / 25℃ / 70%RH
	EMC immunity	EN61000-4-2,3,4,5,6,11 EN61547
	EMC Emission	EN55015 EN61000-3-2,3 (≥50%)(EU) & FCC Part 15 Subpart B(US)
Others	Net Weight	0.35kg
	Dimension	268*38.5*23.6mm (L*W*H)

2.6.4 Corpo illuminante tipo applique da interni

Corpo illuminante tipo applique per interni con caratteristiche simili o equivalenti.

Plafoniera e applique per l'impiego in ambienti interni



Progetto - Riferimento

Data

Specifiche del prodotto

Applicazione

Plafoniera e applique - apparecchio per interni in vetro opale soffiato, opaco satinato, con armatura in fusione di alluminio, per tutti i progetti illuminotecnici. Per esigenze di distribuzione morbida e uniforme della luce. Apparecchio con elevata protezione.

Descrizione del prodotto

Apparecchio in fusione di alluminio e acciaio inox, superficie colore bianco
Vetro opale soffiato satinato
2 fori di fissaggio ø 5 mm
Distanza 255 mm
2 ingressi cavo per cablaggio passante del cavo di allacciamento alla rete fino a 10,5 mm max. 3 x 1,5²
Morsetto 2,5²
Collegamento per conduttore di protezione Alimentatore LED
220-240 V ~ 50/60 Hz
DC 176-280 V
BEGA Thermal Switch®
Spegnimento termico temporaneo per la protezione di componenti sensibili alle temperature
Classe di isolamento I
Protezione IP 44
Protezione contro la penetrazione di corpi estranei ≥ 1 mm e contro spruzzi d'acqua
Protezione antiurto IK04
Protezione contro urti meccanici < 0,5 Joule
CE - Marchio di controllo
CE - Simbolo di conformità
Peso: 2,5 kg
Questo prodotto contiene sorgenti luminose delle classi di efficienza energetica D

Lampada

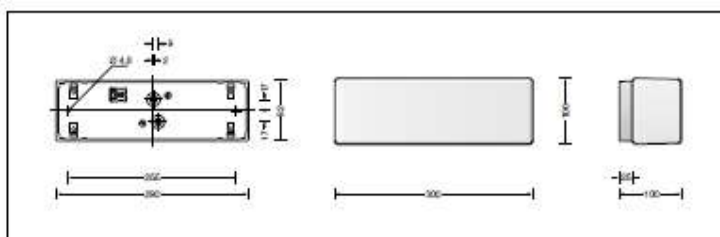
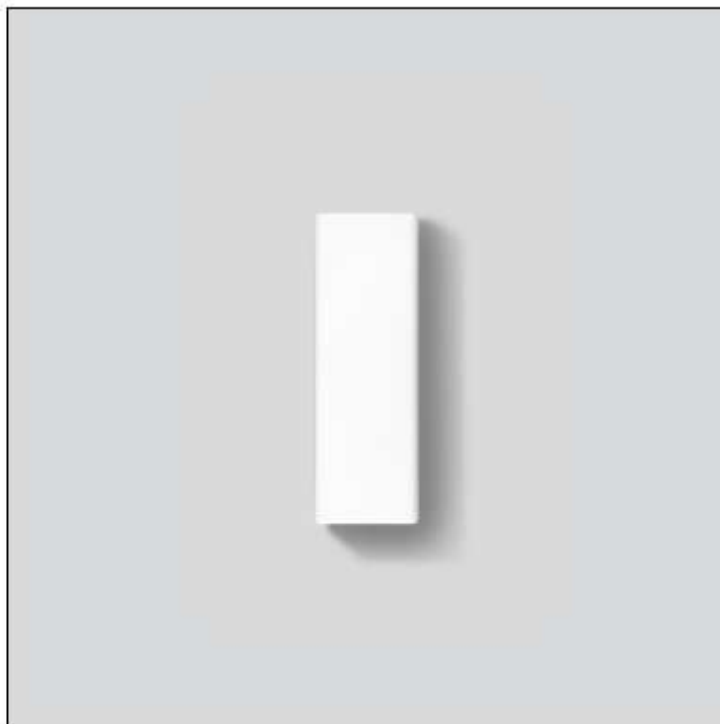
Potenza modulo 7,6 W
Potenza apparecchio 9,3 W
Temperatura di riferimento $t_a = 25^\circ\text{C}$
Temperatura ambiente $t_{a, \text{max}} = 45^\circ\text{C}$

50 496 K27

Denominazione modulo 2x LED-0544/927
Temperatura di colore 2700 K
Indice di resa del colore CRI > 90
Flusso luminoso modulo 1240 lm
Flusso luminoso apparecchi 904 lm
Efficienza luminosa apparecchi 97,2 lm./W

50 496 K3

Denominazione modulo 2x LED-0544/930
Temperatura di colore 3000 K
Indice di resa del colore CRI > 90
Flusso luminoso modulo 1280 lm
Flusso luminoso apparecchi 934 lm
Efficienza luminosa apparecchi 100,4 lm./W



Durata - Temperatura ambiente

Temperatura di riferimento $t_a = 25^\circ\text{C}$
Alimentatore LED: > 50.000 h
Modulo LED: > 200.000 h (L80 B50)
50.000 h (L90 B50)

Temperatura ambiente max. $t_a = 45^\circ\text{C}$ (100 %)
Alimentatore LED: 50.000 h
Modulo LED: > 200.000 h (L80 B50)
50.000 h (L90 B50)

Illuminotecnica

I dati degli apparecchi per il programma di calcolo illuminotecnico DIALux per illuminazione esterna, illuminazione stradale e illuminazione interna, nonché i dati degli apparecchi in formato EULUMDAT e IES sono disponibili sul sito web BEGA www.bega.com.

Corrente di spunto

Corrente di spunto: 20 A / 80 µs
Quantità massima di apparecchi di questo tipo, per i seguenti interruttori:
B 10 A: 35 apparecchi
B 16 A: 56 apparecchi
C 10 A: 58 apparecchi
C 16 A: 94 apparecchi

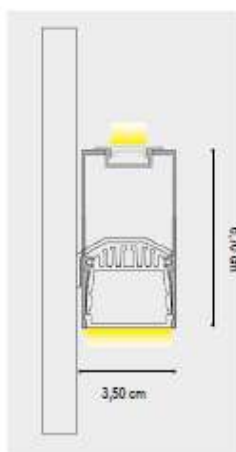
Codice prodotto 50 496

LED con temperatura di colore a scelta 2700 K o 3000 K
2700 K - codice prodotto + K27
3000 K - codice prodotto + K3

2.6.5 Corpo illuminante tipo lineare

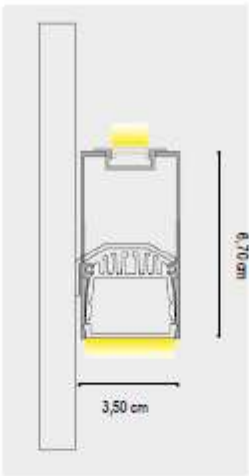
Corpo illuminante tipo profilo lineare con caratteristiche simili e equivalenti.





INSTALLAZIONE STAFFA A PARETE
WALL BRACKET INSTALLATION





DATI TECNICI
TECHNICAL DATA

	1 cm - 40W/m	200 cm - 80W	300 cm - 120W
Nominal LED Flux:	↑ 2200 lm/m - 2200 lm/m ↓	↑ 4400 lm - 4400 lm ↓	↑ 6600 lm - 6600 lm ↓
Flux Tot:	↑ 1760 lm/m - 1760 lm/m ↓	↑ 3520 lm - 3520 lm ↓	↑ 5280 lm - 5280 lm ↓
Output:	105 lm/W	105 lm/W	105 lm/W
CCT:	3000 K	3000 K	3000 K
CRI:	>95	>95	>95
Power:	↑ 20.0W/m - 20.0W/m ↓	↑ 40.0W - 40.0W ↓	↑ 60.0W - 60.0W ↓
Power Tot:	40.0W/m	80.0W	120.0W
Weight:	1.40 Kg/m	2.80 Kg	4.20 Kg
Alluminio/aluminium		Cover: Opale/opal - Satinato/Satin	

DATI TECNICI
TECHNICAL DATA

	1 cm - 60W/m	200 cm - 120W	300 cm - 180W
Nominal LED Flux:	↑ 4050 lm/m - 4050 lm/m ↓	↑ 8100 lm - 8100 lm ↓	↑ 12150 lm - 12150 lm ↓
Flux Tot:	↑ 3510 lm/m - 3510 lm/m ↓	↑ 7020 lm - 7020 lm ↓	↑ 10530 lm - 10530 lm ↓
Output:	135 lm/W	135 lm/W	135 lm/W
CCT:	3000 K	3000 K	3000 K
CRI:	>95	>95	>95
Power:	↑ 30.0W/m - 30.0W/m ↓	↑ 60.0W - 60.0W ↓	↑ 90.0W - 90.0W ↓
Power Tot:	60.0W/m	120.0W	180.0W
Weight:	1.40 Kg/m	2.80 Kg	4.20 Kg
Alluminio/aluminium		Cover: Opale/opal - Satinato/Satin	

DATI TECNICI
TECHNICAL DATA

	1 cm - 40W/m	200 cm - 80W	300 cm - 120W
Nominal LED Flux:	↑ 2200 lm/m - 2200 lm/m ↓	↑ 4400 lm - 4400 lm ↓	↑ 6600 lm - 6600 lm ↓
Flux Tot:	↑ 1760 lm/m - 1760 lm/m ↓	↑ 3520 lm - 3520 lm ↓	↑ 5280 lm - 5280 lm ↓
Output:	105 lm/W	105 lm/W	105 lm/W
CCT:	3000 K	3000 K	3000 K
CRI:	>95	>95	>95
Power:	↑ 20.0W/m - 20.0W/m ↓	↑ 40.0W - 40.0W ↓	↑ 60.0W - 60.0W ↓
Power Tot:	40.0W/m	80.0W	120.0W
Weight:	1.40 Kg/m	2.80 Kg	4.20 Kg
Alluminio/aluminium			Cover: Satinato/Satin Prismatizzato/Prismatic

DATI TECNICI
TECHNICAL DATA

	1 cm - 40W/m	200 cm - 80W	300 cm - 120W
Nominal LED Flux:	↑ 4440 lm/m - 4440 lm/m ↓	↑ 8880 lm - 8880 lm ↓	↑ 13320 lm - 13320 lm ↓
Flux Tot:	↑ 3552 lm/m - 3552 lm/m ↓	↑ 7104 lm - 7104 lm ↓	↑ 10656 lm - 10656 lm ↓
Output:	148 lm/W	148 lm/W	148 lm/W
CCT:	3000 K	3000 K	3000 K
CRI:	>90	>90	>90
Power:	↑ 30.0W/m - 30.0W/m ↓	↑ 60.0W - 60.0W ↓	↑ 90.0W - 90.0W ↓
Power Tot:	60.0W/m	120.0W	180.0W
Weight:	1.40 Kg/m	2.80 Kg	4.20 Kg
Alluminio/aluminium			Cover: Satinato/Satin Prismatizzato/Prismatic


NITURE / FINISHES



2.6.6 Corpo illuminante tipo faretto da incasso per interni

Corpo illuminante tipo faretto da incasso per interni con caratteristiche simili e equivalenti

Made in Italy

 Turis 1.1, codice: TU11005DB
Incassi da interno

CE UK CA CB ENE  su richiesta    kg 0,33  Ø57 mm IP40   F



DESCRIZIONE

Incasso downlight da interno; a incasso (soffitto); Potenza assorbita: 11W; Alimentazione: 230Vac; Flusso sorgente: 1251 lm (3000K, 11W); Flusso emesso: 944 lm (3000K, 11W); 4 power LED, 3 step MacAdam, 50000h L80 B10 (Ta 25°C); Colore LED: 3000K; Ottiche: diffusa; CRI indice resa cromatica: >90; Materiale corpo: corpo in alluminio anodizzato nero, ghiera in acciaio; Finiture: bianco (RAL 9003); Finitura RAL su richiesta; Materiale schermo: schermo in plexiglass trasparente monosatinato; Spessore della superficie d'incasso: min 5 mm, max 25 mm; alimentatore incluso; incluso cavo di 0,30 m; Gestione: ON/OFF; Grado di protezione: IP40; su richiesta disponibile la versione con colore LED RGB; Temperatura di esercizio: 0°C — +45°C; Sicurezza fotobiologica: gruppo rischio 1 secondo EN 62471:2006; Classe di isolamento: classe II; Peso: 330 g; Dimensioni: Ø62x84 mm; Foro d'incasso: Ø57 mm; Volume tecnico per dissipazione: Ø130x130 mm; Classe di consumo energetico: F (sorgente luminosa) in accordo con UE 2019/2015; Accessori: WC3105 Cassaforma per muratura; Testato e approvato tramite E.O.L. test (End Of Line test) con prova di funzionamento e verifica dei parametri elettrici di assorbimento.

SCHEDA TECNICA

TURIS 1.1, CODICE: TU11005DB

DATI TECNICI

CARATTERISTICHE ELETTRICHE

Potenza assorbita	11W
Alimentazione	230Vac
Alimentatore	alimentatore incluso
Gestione	ON/OFF

CARATTERISTICHE ILLUMINOTECNICHE

Numero e tipo LED	4 power LED
Durata media LED	50000h L80 B10 (Ta 25°C)
Colore LED	3000K
CRI Indice resa cromatica	>90
Binning	3 step MacAdam
Ottiche	diffusa
Flusso sorgente	1251 lm (3000K, 11W)
Flusso emesso	944 lm (3000K, 11W)

CARATTERISTICHE MECCANICHE

Dimensioni	Ø62x84 mm
Peso	330 g
Finiture	bianco RAL 9003
Fissaggio	con molle di fissaggio
Materiale corpo	corpo in alluminio anodizzato nero, ghiera in acciaio
Materiale schermo	schermo in plexiglass trasparente monosatinato
Foro d'incasso	Ø57 mm
Volume tecnico per dissipazione	Ø130x130 mm

CARATTERISTICHE GENERALI

Grado di protezione	IP40
Temperatura di esercizio	0°C — +45°C
Classe di consumo energetico	F (sorgente luminosa) in accordo con UE 2019/2015
Classe di isolamento	classe II
Calpestabile	no
Carrabile	no
Cavi di alimentazione	incluso cavo di 0,30 m
Sicurezza fotobiologica	gruppo rischio 1 secondo EN 62471:2006
Note	su richiesta disponibile la versione con colore LED RGB

2.6.7 Corpo illuminante tipo plafoniera grado di protezione IP65

Corpo illuminante tipo plafoniera con caratteristiche simili e equivalenti

SCHEDA TECNICA DEL PRODOTTO

DP 1200 32W 830 IP65 GY

DAMP PROOF | Apparecchi stagni dalla forma classica

DP 1200 32W 830 IP65 GY

Arete di applicazione

- Ideale per aree industriali e di stoccaggio
- Parcheggi e sottopassaggi
- Garage
- Officine e linee di assemblaggio



Vantaggi del prodotto

- Basso sfarfallio $\leq 10\%$
- Distribuzione uniforme della luce
- Risparmio energetico fino al 60% (rispetto agli apparecchi che utilizzano lampade fluorescenti)
- Facile installazione, senza bisogno di attrezzi per il collegamento
- 5 anni di garanzia

Caratteristiche del prodotto

- Efficienza luminosa elevata: 139 lm/W
- Apertura del fascio luminoso: 110°

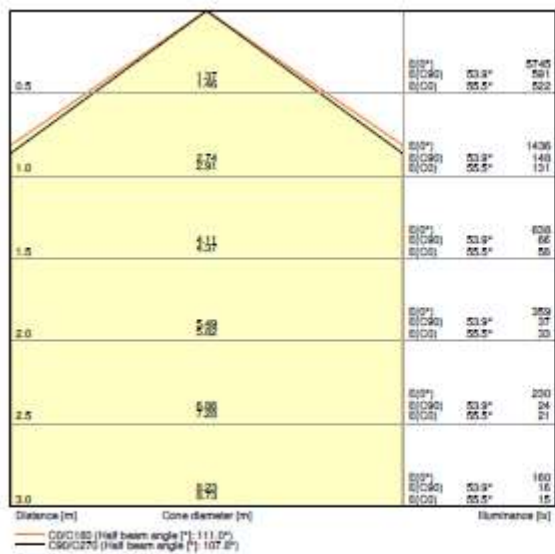
DATI TECNICI

DATI ELETTRICI

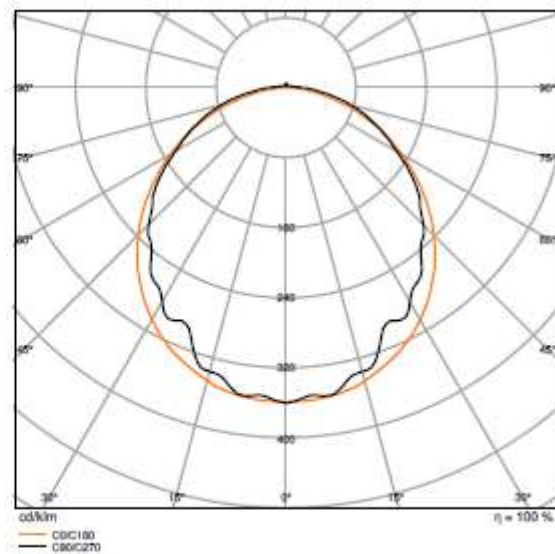
Potenza nominale	32,00 W
Tensione nominale	220...240 V
Frequenza di rete	50...60 Hz
Corrente nominale	280,000 mA
Corrente di innesco	12,2 A
Limit corrente inrush T_{150}	210 μ s
Num. Max. di lum. su interruttore B16 A	27
Num. Max. di lum. su interruttore C10 A	24
Max. numero di apparecchi per interruttore magnetotermico C16	39
Fattore di potenza λ	> 0,90
Distorsione armonica totale	< 20 %
Classe di sicurezza	I
Modalità di funzionamento	Integrated LED driver

Dati fotometrici

Flusso luminoso	4000 lm
Efficienza luminosa	125 lm/W
Temperatura di colore	3000 K
Colore della luce (descrizione)	Bianco caldo
Indice di resa cromatica Ra	> 80
Standard Deviation of Color Matching	4 sdcms
Nessuno sfarfallio	SI
Metrica dello sfarfallio (flicker) (Pst LM)	≤ 1
Metrica dell'effetto stroboscopico (SVM)	≤ 0.4
Gruppo di sicurezza fotobiologico EN62778	RG0
Ampiezza fascio luminoso	110 °



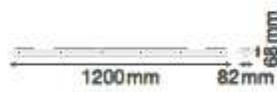
DP 1200 32W 830 IP65 GY



DP 1200 32W 830 IP65 GY

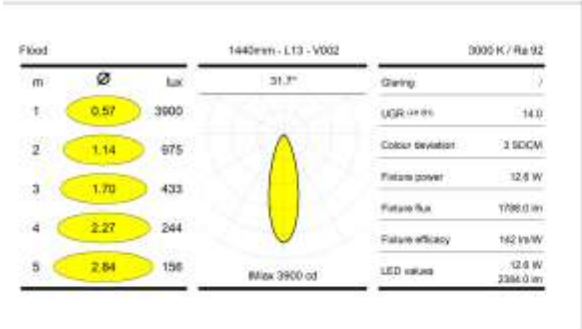
DIMENSIONI E PESO

Lunghezza	1200,00 mm
Larghezza	82,00 mm
Altezza	68,00 mm
Peso prodotto	1360,00 g



DP S 1200 32W 840 IP65 GY

SCHEDA TECNICA
Metrix / **Metrix**



Output	1300 lm/m
CRI-CCT	CRi92 3000K
Ottica	Flood 32°
Flusso Luminoso (lm)	1788

Accessoriistica

Garanzia

Lifetime	L80B10 150.000 h
Certificazione	Conformità CE
Garanzia	5 anni
Temperatura di esercizio	-10° / +35°

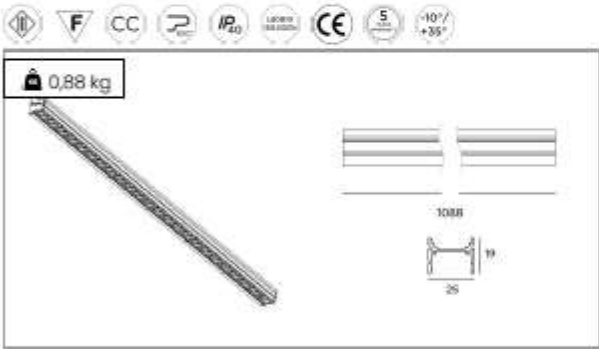
Codice configuratore

Corpo apparecchio	METRIX
Dimensione	L= 1440mm
Output	1300 lm/m
Controllo	Driver remoto
Finitura	Bianco Opaco Txt
CRI-CCT	CRi92 3000K
Ottica	Flood 32°
Kit di applicazione	Kit per fissaggio orientabile - Bianco
Driver remoto	Driver remoto - DALI, 19W

LIN_03

SCHEDA TECNICA
Metrix / **Metrix**

Nome Progetto _____
Codice Prodotto 7244213RW23F+724920040+9D030014DDER



Descrizione prodotto

Proiettori lineari in estrusione di alluminio alimentati in corrente con driver remoto, disponibili in quattro lunghezze e tre potenze.

I nuovi sistemi ottici Microflat, garantiscono rendimenti elevati, una altissima precisione di fascio in forme contenute e fattori di abbagliamento ridottissimi.

Dedicati alla progettazione professionale sono declinati in 2 aperture di fascio simmetriche, una asimmetrica grazing washer ed una specifica wide trasversale in tre range di potenza con output di 1300 Lm/m, 2600Lm/m e 3800Lm/mt.

La completa accessoristica permette installazioni a plafone, cornicione, mensola ed orientabile.

Caratteristiche elettriche

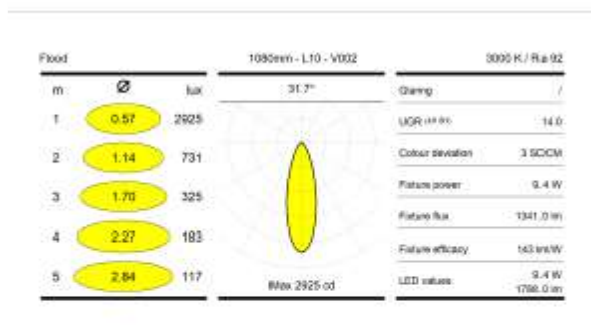
Classe di isolamento	Classe III
Classe F	SI
Alimentazione	CC
Controllo	Driver remoto
Driver remoto	Driver remoto - DALI, 14W
Potenza	9,4W
Potenza (W)	9,4

Caratteristiche meccaniche

Filo incandescente	650°
Grado di protezione	IP40
Dimensione	L= 1080mm
Finitura	Bianco Opaco Txt
Kit di applicazione	Kit per fissaggio orientabile - Bianco

Caratteristiche illuminotecniche

SCHEDA TECNICA
*Metrix / **Metrix***



Output 1300 lm/m

CRI-CCT CRI92 3000K

Ottica Flood 32°

Flusso luminoso (lm) 1341

Accessoristica

Garanzia

Lifetime L80B10 150.000 h

Certificazione Conformità CE

Garanzia 5 anni

Temperatura di esercizio -10° / +35°

Codice configuratore

Corpo apparecchio	METRIX
Dimensione	L= 1080mm
Output	1300 lm/m
Controllo	Driver remoto
Finitura	Bianco Opaco Txt
CRI-CCT	CRI92 3000K
Ottica	Flood 32°
Kit di applicazione	Kit per fissaggio orientabile - Bianco
Driver remoto	Driver remoto - DALI, 14W

SCHEDA TECNICA

Museo Revo / **Museo Revo Compact**

Finitura	Sabbia
----------	--------

Caratteristiche illuminotecniche

Tolleranza Cromatica	2 SDCM
CRI-CCT	CRI92 3000K
Ottica	Flood 35° - 25,lw
Flusso Luminoso (lm)	2343
Efficienza luminosa (lm/W)	83,38078286
UGR (4H 8H)	5.2
Lux Max H=1m (lx)	7026,84

Accessoristica

Accessori montati di fabbrica	Accessorio 1: Honeycomb, Accessorio 2: Snoot, Accessorio 3: No accessori
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Garanzia

Certificazione	Conformità CE
Garanzia	5 anni
Temperatura di esercizio	-10° / +35°
Lifetime	L80B10 100.000 h

Codice configuratore

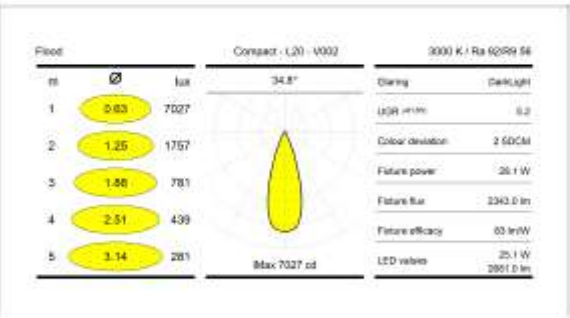
Corpo apparecchio	MUSEO REVO Compact
Versione	1x
Controllo	DALI
Finitura	Sabbia
CRI-CCT	CRI92 3000K

SCHEDA TECNICA
Museo Revo / Museo Revo Compact

Flood 35° - 25,1W

Accessori montati di fabbrica

Accessorio 1: Honeycomb, Accessorio 2: Snoot, Accessorio 3: No accessori



Accessoristica

Accessori montati di fabbrica



Accessori REVO

SP_02

SCHEDA TECNICA
Museo Revo Small

Nome Progetto

Codice Prodotto **38540DS23NH**



Descrizione prodotto

Proiettori per installazioni a superficie con driver integrati nella base di supporto e fissaggio. Adatti per illuminazioni ad altissimo comfort visivo, diretta ed indiretta. Dedicati ad una progettazione illuminotecnica evoluta, i nuovi sistemi ottici Revo-Dark risultano particolarmente adatti per ambientazioni ad altissimo comfort visivo. Caratterizzati da doppio snodo e sei gradi di libertà, permettono un posizionamento preciso e puntuale in ogni direzione. Le dimensioni ridotte al minimo, le finiture dedicate alla massima mimetizzazione nel contesto, si coniugano con i nuovi parametri prestazionali REVO raggiungendo un rapporto dimensione-prestazione a prova di confronto.

La versione Small offre fasci da 6° a 50°, due fasci ellittici e sagomatore più numerosi accessori a compendio. Alta resa cromatica, coefficiente UGR<10 ed il rispetto dei parametri DARK lighting, sono completati dalla qualità dei 2 SDCM della sorgente e dalla particolare pulizia della proiezione dei fasci. La piena compatibilità con i sistemi di controllo più diffusi, rendono Museo Revo Small strumento perfetto in contesti dove la valenza della sorgente sia determinata da una altissima qualità prestazionale e dalla minima invadenza fisica e visuale. La versione multi-ottica permette di utilizzare fasci differenziati sullo stesso apparecchio nelle varianti di aperture. Le versioni multi-ottica configurate con fasci unificati sono disponibili tutte le varianti di aperture.

Caratteristiche elettriche

Classe di isolamento	Classe I - Contatto a terra
Classe F	SI
Controllo	DALI
Potenza (W)	9.2

Caratteristiche meccaniche

Filo Incandescente	650°
Grado di protezione	IP20
Versione	1x
Finitura	Sabbia

SCHEDA TECNICA

Museo Revo / **Museo Revo Small**

Caratteristiche illuminotecniche

Tolleranza Cromatica	2 SDCM
CRI-CCT	CRI92 3000K
Ottica	Narrow Spot 11° - 8,2W
Flusso Luminoso (lm)	492
Efficienza luminosa (lm/W)	53,47826099
UGR (4H 8H)	4.7
Lux Max H=1m (lx)	9535,93

Accessoristica

Accessori montati di fabbrica	Snoot
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Garanzia

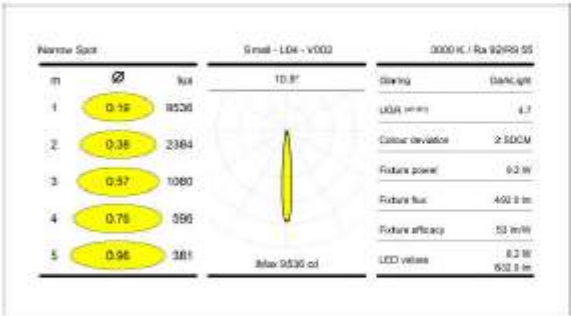
Certificazione	Conformità CE
Garanzia	5 anni
Temperatura di esercizio	-10° / +35°
Lifetime	L80B10 100.000 h

Codice configuratore

Corpo apparecchio	MUSEO REVO Small
Versione	1x
Controllo	DALI
Finitura	Sabbia
CRI-CCT	CRI92 3000K
Ottica	Narrow Spot 11° - 8,2W

Accessori montati di fabbrica

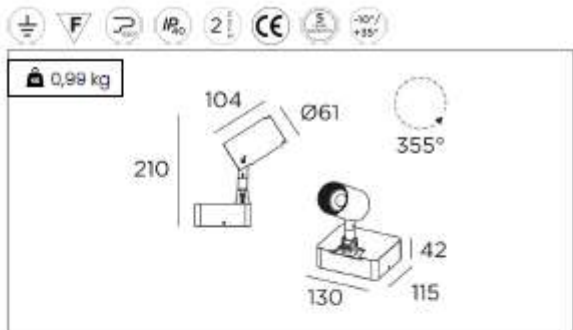
Accessorio 1: Honeycomb, Accessorio 2 e 3: No accessori



SP_03

SCHEDA TECNICA
Museo Revo Medium

Nome Progetto _____
Codice Prodotto 38640DS23FHS



Descrizione prodotto

Proiettori per installazioni a superficie con driver integrati nella base di supporto e fissaggio.
Adatti per illuminazioni ad altissimo comfort visivo, diretta ed indiretta. Dedicati ad una progettazione illuminotecnica evoluta, i nuovi sistemi ottici Revo-Dark risultano particolarmente adatti per ambientazioni ad altissimo comfort visivo. Caratterizzati da doppio snodo e sei gradi di libertà, permettono un posizionamento preciso e puntuale in ogni direzione. Le dimensioni ridotte al minimo, le finiture dedicate alla massima mimetizzazione nel contesto, si coniugano con i nuovi parametri prestazionali REVO raggiungendo un rapporto dimensione-prestazione a prova di confronto.

La versione Medium offre aperture da 8° a 50° due fasci ellittici, le ricercate asimmetriche Deep e Grazing wall-washer ad alta omogeneità e un sagomatore.
I numerosi accessori a compendio sono progettati con sistema di fissaggio ad elementi sovrapposti permettendo una configurazione ottica differenziata e specifica. Alta resa cromatica, coefficiente UGR<10 ed il rispetto dei parametri DARK lighting, sono completati dalla qualità del 2 SDCM della sorgente e dalla particolare pulizia della proiezione dei fasci. Il corpo complessivo in alluminio, si avvale di nuovi braccetti in ottone frizionati, dotati di bloccaggio micrometrico per un facile e definitivo puntamento.
La piena compatibilità con i sistemi di controllo più diffusi, rendono Museo Revo Medium strumento perfetto in contesti dove la valenza della sorgente sia determinata da una altissima qualità prestazionale e dalla minima invadenza fisica e visuale.

Questo modello è anche configurabile nella versione sagomatore con lenti mobili, per ottenere proiezioni quadrangolari focalizzate con uno strumento leggero e di piccole dimensioni

Caratteristiche elettriche

Classe di isolamento	Classe I - Contatto a terra
Classe F	SI
Controllo	DALI
Potenza (W)	19,4

Caratteristiche meccaniche

Filo	650°
Incandescente	

SCHEDA TECNICA
Museo Revo / Museo Revo Medium

Grado di protezione	IP40
Versione	1x
Finitura	Sabbia

Caratteristiche illuminotecniche

Tolleranza Cromatica	2 SDCM
CRI-CCT	CRI92 3000K
Ottica	Flood 37° - 17,3W
Flusso Luminoso (lm)	1308
Efficienza luminosa (lm/W)	92,31958732
UGR (4H 8H)	8,4
Lux Max H=1m (lx)	4839,43

Accessoristica

Accessori montati di fabbrica	Accessorio 1: Honeycomb, Accessorio 2: Snoot, Accessorio 3: No accessori
-------------------------------	--

Garanzia

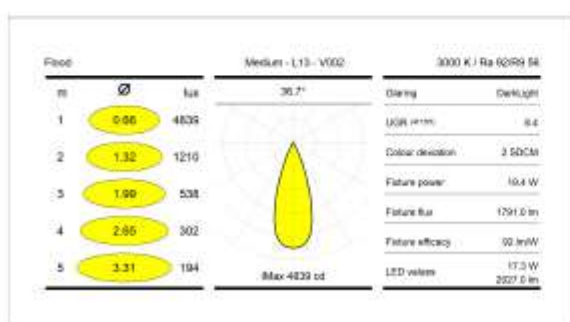
Certificazione	Conformità CE
Garanzia	5 anni
Temperatura di esercizio	-10° / +35°
Lifetime	L80B10 100.000 h

Codice configuratore

Corpo apparecchio	MUSEO REVO Medium
Versione	1x
Controllo	DALI

SCHEDA TECNICA
Museo Revo / Museo Revo Medium

Finitura	Sabbia
CRI-CCT	CRI92 3000K
Ottica	Flood 37° - 17,3W
Accessori montati di fabbrica	Accessorio 1: Honeycomb, Accessorio 2: Snoot, Accessorio 3: No accessori



Accessoristica

Accessori montati di fabbrica

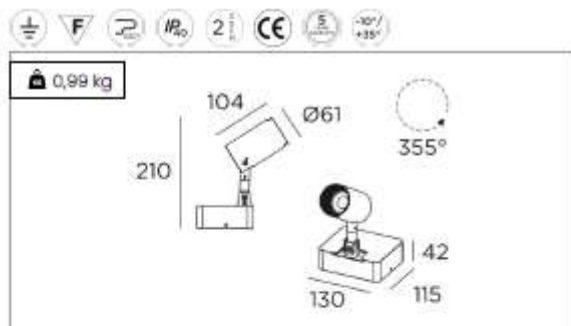


SP_04

SCHEMA TECNICA
Museo Revo Medium

Nome Progetto

Codice Prodotto **38640DS236HS**



Descrizione prodotto

Proiettori per installazioni a superficie con driver integrati nella base di supporto e fissaggio.

Adatti per illuminazioni ad altissimo comfort visivo, diretta ed indiretta. Dedicati ad una progettazione illuminotecnica evoluta, i nuovi sistemi ottici Revo-Dark risultano particolarmente adatti per ambientazioni ad altissimo comfort visivo. Caratterizzati da doppio snodo e sei gradi di libertà, permettono un posizionamento preciso e puntuale in ogni direzione. Le dimensioni ridotte al minimo, le finiture dedicate alla massima mimetizzazione nel contesto, si coniugano con i nuovi parametri prestazionali REVO raggiungendo un rapporto dimensione-prestazione a prova di confronto.

La versione Medium offre aperture da 8° a 50° due fasci ellittici, le ricercate asimmetriche Deep e Grazing wall-washer ad alta omogeneità e un sagomatore.

I numerosi accessori a compendio sono progettati con sistema di fissaggio ad elementi sovrapposti permettendo una configurazione ottica differenziata e specifica. Alta resa cromatica, coefficiente UGR<10 ed il rispetto dei parametri DARK lighting, sono completati dalla qualità del 2 SDCM della sorgente e dalla particolare pulizia della proiezione dei fasci. Il corpo complessivo in alluminio, si avvale di nuovi braccetti in ottone frizionati, dotati di bloccaggio micrometrico per un facile e definitivo puntamento.

La piena compatibilità con i sistemi di controllo più diffusi, rendono Museo Revo Medium strumento perfetto in contesti dove la valenza della sorgente sia determinata da una altissima qualità prestazionale e dalla minima invadenza fisica e visuale.

Questo modello è anche configurabile nella versione sagomatore con lenti mobili, per ottenere proiezioni quadrangolari focalizzate con uno strumento leggero e di piccole dimensioni

Caratteristiche elettriche

Classe di isolamento **Classe I - Contatto a terra**

Classe F **SI**

Controllo **DALI**

Potenza (W) **19.0**

Caratteristiche meccaniche

Filo **650°**
Incandescente

SCHEDA TECNICA
Museo Revo / Museo Revo Medium

Grado di protezione IP40

Versione 1x

Finitura Sabbia

Caratteristiche illuminotecniche

Tolleranza Cromatica 2 SDCM

CRI-CCT CRI92 3000K

Ottica Elliptical Wide Flood 17W

Flusso Luminoso (lm) 1205

Efficienza luminosa (lm/W) 63,42105268

UGR (4H 8H) 25.5

Lux Max H=1m (lx) 1464,39

Accessoristica

Accessori montati di fabbrica Accessorio 1: Honeycomb, Accessorio 2: Snoot, Accessorio 3: No accessori

Garanzia

Certificazione Conformità CE

Garanzia 5 anni

Temperatura di esercizio -10° / +35°

Lifetime L80B10 100.000 h

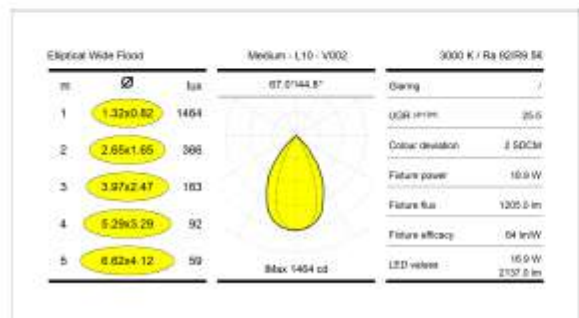
Codice configuratore

Corpo apparecchio MUSEO REVO Medium

Versione 1x

Controllo DALI

Finitura	Sabbia
CRI-CCT	CRI92 3000K
Ottica	Elliptical Wide Flood 17W
Accessori montati di fabbrica	Accessorio 1: Honeycomb, Accessorio 2: Snoot, Accessorio 3: No accessori



Accessoristica

Accessori montati di fabbrica



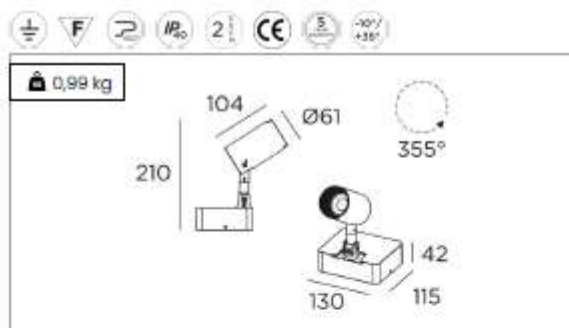
Accessori REVO

SP_05

SCHEDA TECNICA
Museo Revo Medium

Nome Progetto _____

Codice Prodotto 38640DS23FP



Descrizione prodotto

Proiettori per installazioni a superficie con driver integrati nella base di supporto e fissaggio.

Adatti per illuminazioni ad altissimo comfort visivo, diretta ed indiretta. Dedicati ad una progettazione illuminotecnica evoluta, i nuovi sistemi ottici Revo-Dark risultano particolarmente adatti per ambientazioni ad altissimo comfort visivo. Caratterizzati da doppio snodo e sei gradi di libertà, permettono un posizionamento preciso e puntuale in ogni direzione. Le dimensioni ridotte al minimo, le finiture dedicate alla massima mimetizzazione nel contesto, si coniugano con i nuovi parametri prestazionali REVO raggiungendo un rapporto dimensione-prestazione a prova di confronto.

La versione Medium offre aperture da 8° a 50° due fasci ellittici, le ricercate asimmetriche Deep e Grazing wall-washer ad alta omogeneità e un sagomatore.

I numerosi accessori a compendio sono progettati con sistema di fissaggio ad elementi sovrapposti permettendo una configurazione ottica differenziata e specifica. Alta resa cromatica, coefficiente UGR<10 ed il rispetto dei parametri DARK lighting, sono completati dalla qualità del 2 SDCM della sorgente e dalla particolare pulizia della proiezione dei fasci. Il corpo complessivo in alluminio, si avvale di nuovi braccetti in ottone frizionati, dotati di bloccaggio micrometrico per un facile e definitivo puntamento.

La piena compatibilità con i sistemi di controllo più diffusi, rendono Museo Revo Medium strumento perfetto in contesti dove la valenza della sorgente sia determinata da una altissima qualità prestazionale e dalla minima invadenza fisica e visuale.

Questo modello è anche configurabile nella versione sagomatore con lenti mobili, per ottenere proiezioni quadrangolari focalizzate con uno strumento leggero e di piccole dimensioni

Caratteristiche elettriche

Classe di isolamento	Classe I - Contatto a terra
Classe F	SI
Controllo	DALI
Potenza (W)	19,4

Caratteristiche meccaniche

Filo	650°
Incandescente	

SCHEDA TECNICA
Museo Revo / Museo Revo Medium

Grado di protezione	IP40
Versione	1x
Finitura	Sabbia

Caratteristiche illuminotecniche

Tolleranza Cromatica	2 SDCM
CRI-CCT	CRI92 3000K
Ottica	Flood 37° - 17,3W
Flusso Luminoso (lm)	1308
Efficienza luminosa (lm/W)	92,31958732
UGR (4H 6H)	8,4
Lux Max H=1m (lx)	4839,43

Accessoriistica

Accessori montati di fabbrica	Accessorio 1: Vetro protettivo, Accessorio 2: No accessori, Accessorio 3: No accessori
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Garanzia

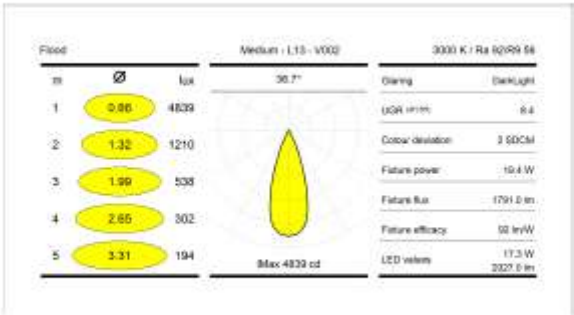
Certificazione	Conformità CE
Garanzia	5 anni
Temperatura di esercizio	-10° / +35°
Lifetime	L80B10 100.000 h

Codice configuratore

Corpo apparecchio	MUSEO REVO Medium
Versione	1x
Controllo	DALI

SCHEDA TECNICA
Museo Revo / Museo Revo Medium

Finitura	Sabbia
CRI-CCT	CRI92 3000K
Ottica	Flood 37° ~ 17,3W
Accessori montati di fabbrica	Accessorio 1: Vetro protettivo, Accessorio 2: No accessori, Accessorio 3: No accessori



Accessoristica

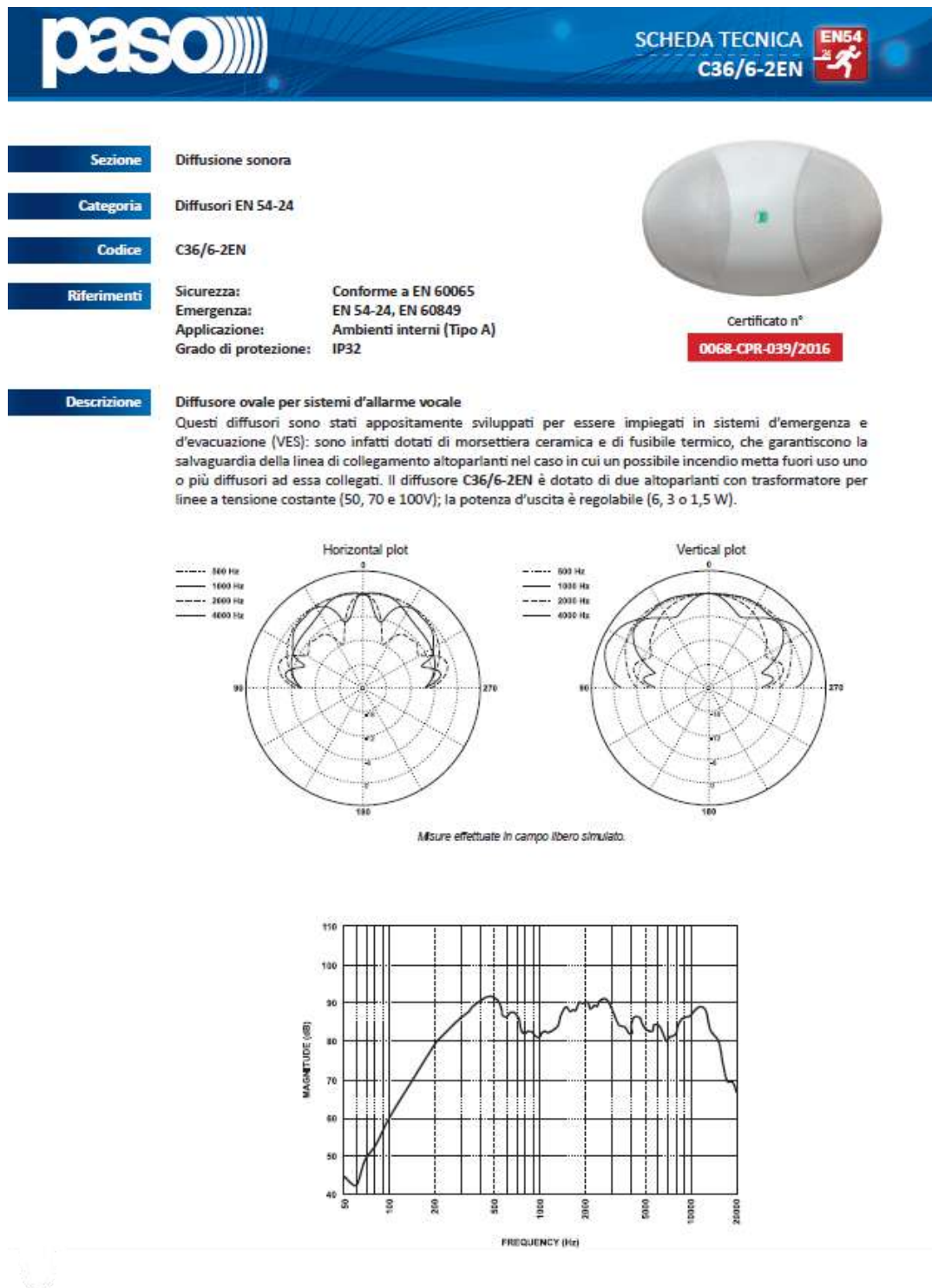
Accessori montati di fabbrica



Accessori REVO

2.6.10 Diffusione sonora.

Proiettori di suono per varie tipologie come sotto riportato nelle schede tecniche.





SCHEDA TECNICA
C36/6-2EN



Dati tecnici

C36/6-EN	
<p>CE</p> <p>0068</p> <p>PASO S.p.A Via Settembrini, 34 - 20020 Lainate (MI)</p> <p>16</p> <p>0068-CPR-039/2016</p> <p>EN 54-24</p> <p>Loudspeaker for voice alarm systems for fire detection and fire alarm systems for buildings</p> <p>C36/6-2EN</p> <p>Type A</p>	
Potenza nominale	6 W (3+3 W) / 100 V
Impedenza nominale (linea 100V)	1667 Ω (6W) 3333 Ω (3W) 6667 Ω (1.5W)
Impedenza nominale (linea 70V)	817 Ω (6W) 1633 Ω (3W) 3267 Ω (1.5W)
Sensibilità	86 dB (1W/1m)
Massima pressione sonora SPL*	93 dB (6W/1m)
Risposta in frequenza	170 - 16.000 Hz (peak -10 dB)
Angolo di dispersione orizzontale (-6 dB)	170° (500 Hz) 150° (1 kHz) 35° (2 kHz) 30° (4 kHz)
Angolo di dispersione verticale (-6 dB)	180° (500 Hz) 180° (1 kHz) 120° (2 kHz) 140° (4 kHz)
Temperatura d'esercizio / stoccaggio	-25°C + +55°C / -40°C + 70°C
Umidità relativa	< 95%
Dimensioni	258 x 169 x 72 mm
Peso	0,95 kg

* Misura effettuata al centro geometrico dell'altoparlante.



SCHEDA TECNICA
C49/6-EN



Sezione Sistemi di evacuazione vocale EN54

Categoria Diffusori EN54-24

Codice C49/6-EN

Riferimenti
Sicurezza: Conforme a EN 50200, EN 62368-1
Emergenza: UNI EN54-24:2008 (cert. n° 0068/CPR/153-2020)
UNI 9795:2013 - UNI ISO 7240-19:2010
UNI CEN/TS 54-32:2015 - CEI EN 50849
Applicazione: Ambienti interni (Tipo A)

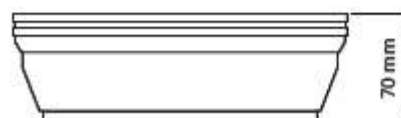
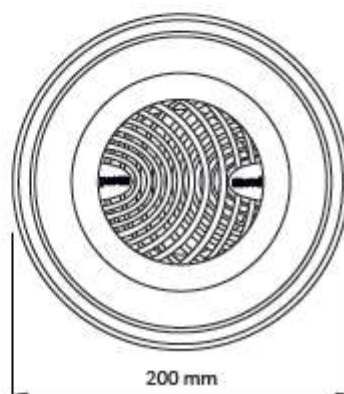
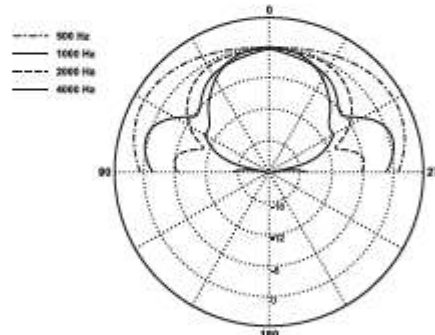
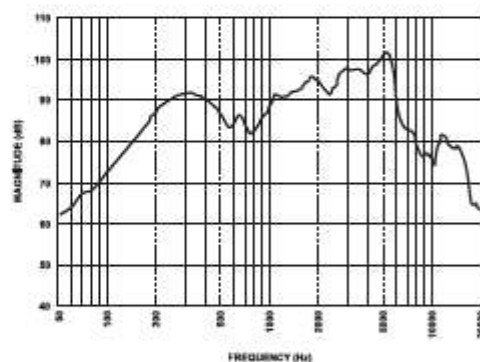


Descrizione Plafoniera sporgente 6 W per sistemi d'allarme vocale EN54-24

Il modello C49/6-EN è un diffusore da interno per montaggio sporgente sia a parete che a soffitto. È realizzato in ABS autoestinguente UL94-V0 di colore bianco ed è consigliato in tutti gli ambienti al coperto quando sia richiesta un'ottima riproduzione sonora.

Questo diffusore è stato appositamente sviluppato per essere impiegato in sistemi d'emergenza e d'evacuazione (VES): è infatti dotato di morsettiera ceramica e di fusibile termico, che garantiscono la salvaguardia della linea di collegamento altoparlanti nel caso in cui un possibile incendio metta fuori uso uno o più diffusori ad essa collegati.

Dati tecnici





Dati tecnici

C49/6-EN	
<p style="text-align: center;">  20 PASO S.p.A Via Settembrini, 34 - 20020 Lainate (MI) 0068 0068/CPR/153-2020 EN 54-24 Loudspeaker for voice alarm systems for fire detection and fire alarm systems for buildings C49/6-EN Type A </p>	
N° altoparlanti	1
Potenza nominale	6 W
Potenza regolabile	6 W / 3 W / 1,5 W
Ingressi trasformatore di linea	50 V / 70 V / 100 V
Impedenza nominale (linea 100 V)	1670 Ω (6 W) / 3300 Ω (3 W) / 6670 Ω (1,5 W)
Risposta in frequenza @ -6dB	170 ÷ 8.000 Hz
Efficienza @ 1W/1m	92 dB
Massima pressione acustica SPL @ Pmax/1m	100 dB
Angolo di dispersione (- 6dB)	500 Hz: 180° 1 kHz: 180° 2 kHz: 120° 4 kHz: 80°
Materiale	ABS autoestinguente UL94-V0
Colore	Bianco
Dimensioni	Ø 200 x 70 mm
Peso netto	1 kg



SCHEDA TECNICA
C49/12-EN



Sezione

Sistemi di evacuazione vocale EN54

Categoria

Diffusori EN54-24

Codice

C49/12-EN

Riferimenti

Sicurezza: Conforme a EN 50200, EN 62368-1
Emergenza: UNI EN54-24:2008 (cert. n° 0068/CPR/153-2020)
UNI 9795:2013 - UNI ISO 7240-19:2010
UNI CEN/TS 54-32:2015 - CEI EN 50849
Applicazione: Ambienti esterni (Tipo B)



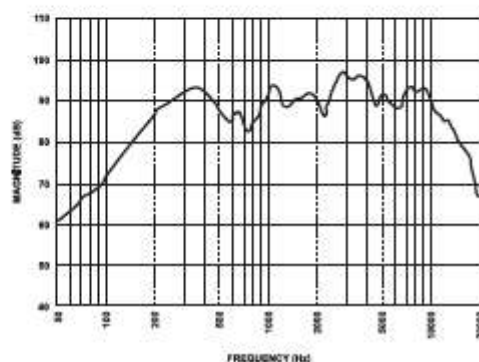
Descrizione

Plafoniera sporgente 12W per sistemi d'allarme vocale EN54-24

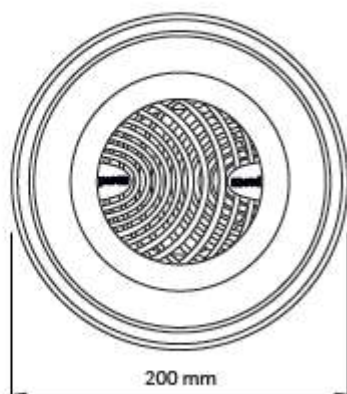
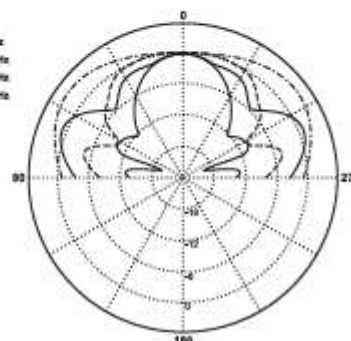
Il modello C49/12-EN è un diffusore da interno per montaggio sporgente sia a parete che a soffitto. È realizzato in ABS autoestinguente UL94-V0 di colore bianco ed è adatto all'installazione in ambienti esterni o umidi coperti quando sia richiesta un'ottima riproduzione sonora.

Questo diffusore è stato appositamente sviluppato per essere impiegato in sistemi d'emergenza e d'evacuazione (VES): è infatti dotato di morsettiera ceramica e di fusibile termico, che garantiscono la salvaguardia della linea di collegamento altoparlanti nel caso in cui un possibile incendio metta fuori uso uno o più diffusori ad essa collegati.

Dati tecnici



Legend for the frequency response graph:
— 500 Hz
— 1000 Hz
— 2000 Hz
— 4000 Hz





SCHEDA TECNICA
C49/12-EN



Dati tecnici

C49/12-EN



20

PASO S.p.A Via Settembrini, 34 - 20020 Lainate (MI)

0068

0068/CPR/153-2020

EN 54-24

Loudspeaker for voice alarm systems
for fire detection and fire alarm systems for buildings

C49/12-EN

Type B

N° altoparlanti	1
Potenza nominale	12 W
Potenza regolabile	12 W / 6 W / 3 W
Ingressi trasformatore di linea	50 V / 70 V / 100 V
Impedenza nominale (linea 100 V)	830 Ω (12 W) / 1670 Ω (6 W) / 3330 Ω (3 W)
Risposta in frequenza @ -6dB	160 ÷ 15.000 Hz
Efficienza @ 1W/1m	90 dB
Massima pressione acustica SPL @ Pmax/1m	101 dB
Angolo di dispersione (- 6dB)	500 Hz: 180° 1 kHz: 180° 2 kHz: 110° 4 kHz: 60°
Grado di protezione	IP 33C
Materiale	ABS autoestinguente UL94-V0
Colore	Bianco
Dimensioni	Ø 200 x 70 mm
Peso netto	1,7 kg



SCHEDA TECNICA
C48/12-EN



Sezione Diffusione sonora

Categoria Diffusori EN 54-24

Serie C48/12-EN

Codice
Sicurezza: Conforme a EN 60065
Emergenza: EN 54-24, EN 60849
Applicazione: Ambienti interni (Tipo A)
Grado di protezione: IP44



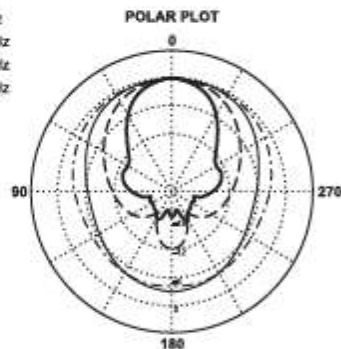
Descrizione

Proiettore per sistemi d'allarme vocale

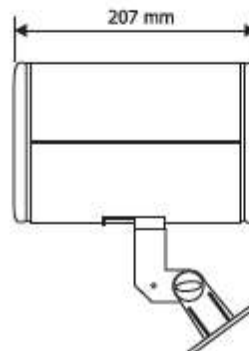
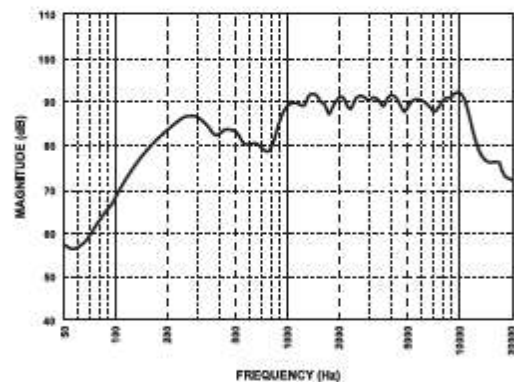
Il proiettore C48/12-EN, caratterizzato da corpo in ABS auto-estinguente UL94-V0, è dotato di cavo resistente al fuoco UNI 9795 2010 (lunghezza 80cm); il sistema di fissaggio rende agevole il montaggio e consente un ottimale orientamento del diffusore. Questi diffusori sono stati appositamente sviluppati per essere impiegati in sistemi d'emergenza e d'evacuazione (VES): sono infatti dotati di morsettiera ceramica e di fusibile termico, che garantiscono la salvaguardia della linea di collegamento altoparlanti nel caso in cui un possibile incendio metta fuori uso uno o più diffusori ad essa collegati.

Dati tecnici

--- 500 Hz
— 1000 Hz
--- 2000 Hz
— 4000 Hz



Misure effettuate in campo libero simulato.





Dati tecnici

C48/12-EN	
<p>CE</p> <p>0068</p> <p>PASO S.p.A Via Settembrini, 34 - 20020 Lainate (MI)</p> <p>13</p> <p>0068-CPD-033/2013</p> <p>EN 54-24</p> <p>Loudspeaker for voice alarm systems for fire detection and fire alarm systems for buildings</p> <p>C48/12-EN</p> <p>Type A</p>	
Potenza nominale	12 W @100 V
Numero di altoparlanti	1
Impedenza nominale (linea 100V)	830 Ω (12W) 1670 Ω (6W) 3330 Ω (3W)
Sensibilità	90 dB (1W/1m)
Massima pressione sonora SPL*	101 dB (12W/1m)
Risposta in frequenza	170 + 13.000 Hz (peak -10 dB)
Angolo di dispersione orizzontale (-6 dB)	360° (500 Hz) 170° (1 kHz) 100° (2 kHz) 70° (4 kHz)
Angolo di dispersione verticale (-6 dB)	360° (500 Hz) 170° (1 kHz) 100° (2 kHz) 70° (4 kHz)
Temperatura d'esercizio / stoccaggio	-25°C + +55°C / -40°C + 70°C
Umidità relativa	< 95%
Dimensioni	Ø 140 x 207 mm
Peso	1,7 kg

* Misura effettuata al centro geometrico dell'altoparlante.

2.6.11 Sistema di gestione dell'illuminazione.



DALI-2 IoT4

Datasheet

DALI-LAN Interface



Central control module and
DALI-LAN Interface
DALI Cockpit Interface
suitable for DALI and DALI-2

Standard Version: Art.Nr. 22176625

Art.Nr. 22176625-PS

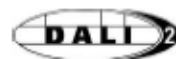
Node-RED Version: Art.Nr. 22176625-NR

Art.Nr. 22176625-PS-NR

DALI-2 IoT4 Central Control Device & Interface

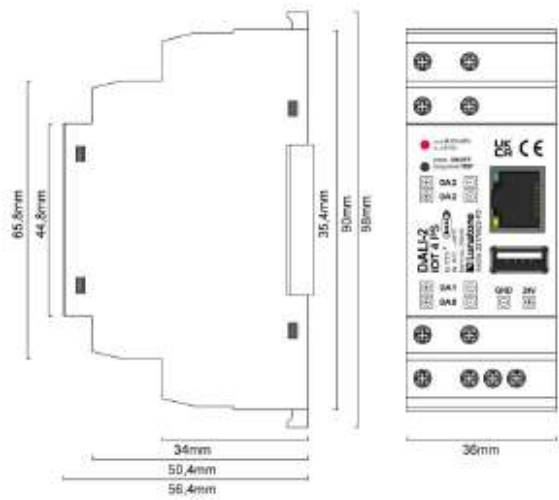
Overview

- Independent lighting control for up to 256 DALI control gear on 4 DALI lines
- Version with integrated DALI bus power supply (125mA/line, ~30 DALI gears/line)
- Interface module to connect a DALI network and a LAN network
- IoT (LAN) interface to DALI: addressing, status queries, monitoring, etc. of DALI ballasts
- PF Software DALI Cockpit for simple configuration of DALI devices on the DALI lines
- Modbus TCP interface for integration in central control units
- RESTful API endpoints and WebSocket with JSON syntax, encrypted (optionally unencrypted) for custom integrations with local network-based third-party systems.
- Connect the 4 DALI lines by frame forwarding: Trigger-Actions *(configuration via DALI Cockpit coming soon)*
- Additional centralized functionality (configuration via DALI Cockpit coming soon)
 - DALI frame forwarding between lines (trigger actions)
 - Configurable time switch / scheduler
 - sequences
 - Circadian schedules
- Node-RED support: Lunatone Node-RED module for simple integration in Node-RED automations (supported from firmware version 1.7.0 on)
- DALI-2 IoT Node-RED version available: DALI-2 IoT4 with integrated Node-RED server (Art. No. 22176625-NR)
- DIN rail mounting (2DU)
- Supply 24VDC (e.g.: with 24V / 300mA Art.Nr. 24166012-24HS)

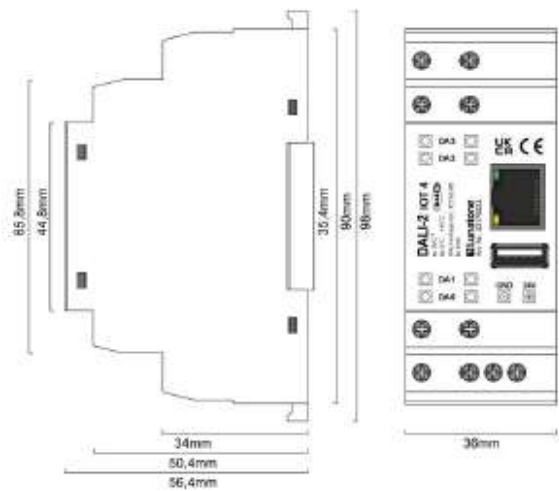
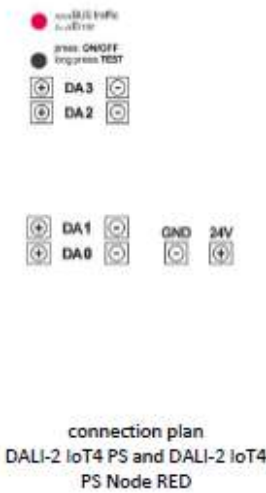


Specification, Characteristics

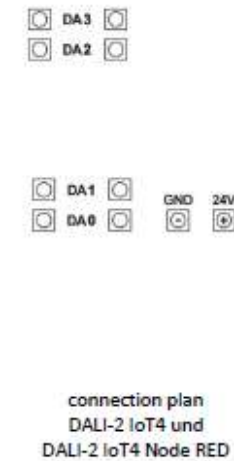
type	DALI-2 IoT4	DALI-2 IoT4 PS
article number	22176625 22176625-NR	22176625-PS 22176625-PS-NR
GTIN	9010342014444	9010342014482
electrical data		
power supply	24V-48V DC	
Ethernet	1 x Ethernet 10/100Base-T, electrically isolated, isolation voltage, 1500V AC, RJ45-connector	
DALI	4x DALI, electrically isolated	
output DA0, DA0 / DA1, DA1 / DA2,DA2 / DA3, DA3		
output type	DALI control output	DALI control output and DALI power supply
number of outputs	4	4
marking output terminals	DA, DA	DA+, DA-
output voltage range	9,5Vdc ... 22,5Vdc (according to IEC62386)	12Vdc ... 20,5Vdc
DALI supply current	-	120mA
guaranteed DALI supply current	-	120mA
max. DALI supply current	-	250mA
general data		
mounting	DIN rail (2 DU)	
Dimensions (L x W x H)	98 x 36 x 56 mm (see page 4)	
protection degree housing	IP40	
protection degree terminals	IP20	
environmental conditions		
storage and transportation temperature	-20°C ... +75°C	
operational ambient temperature	-20°C ... +60°C	
rel. humidity, not condensing	15% ... 90%	
terminals		
connection type	screw connector	
wire size: solid core	0,5 ... 2,5 mm ² (AWG20 ... AWG14)	
wire size: fine wired	0,5 ... 2,5 mm ² (AWG20 ... AWG14)	
wire size: using wire end ferrule	0,25 ... 1,5 mm ²	
stripping length	7 mm / 0,27 inch	
tightening torque	0,5 Nm	
release of wire	open screw	



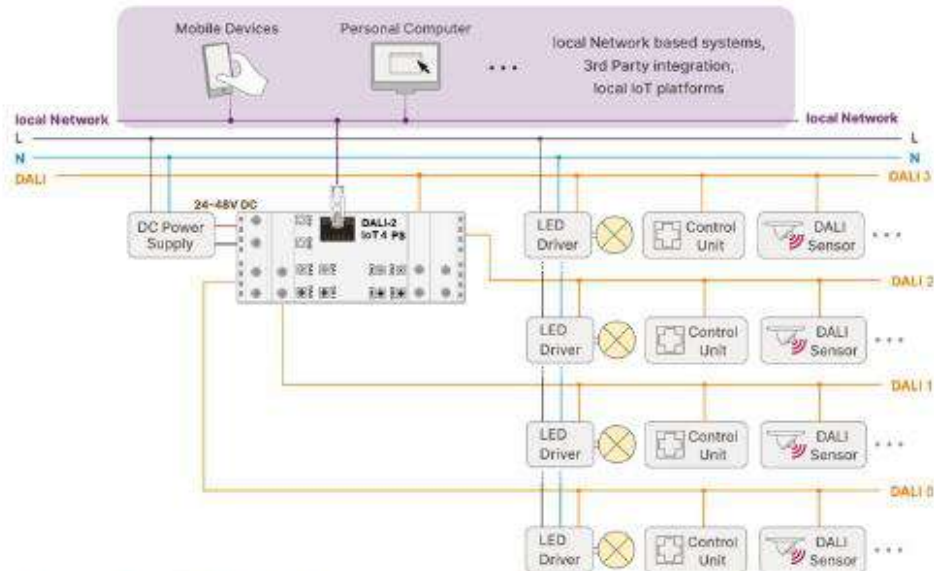
dimensions
DALI-2 IoT4 PS and DALI-2 IoT4 PS Node RED



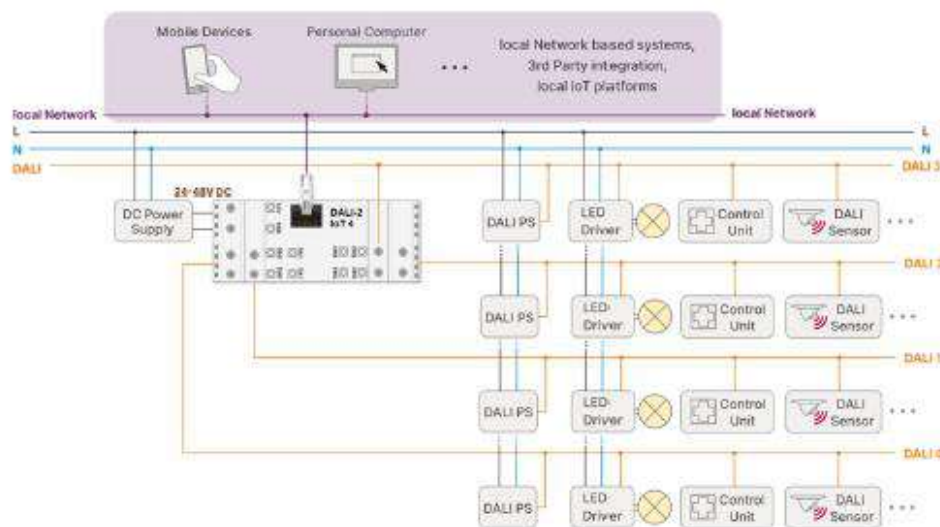
dimesions
DALI-2 IoT4 und DALI-2 IoT4 Node RED



Typical Application





typical application: DALI-2 IoT4 PS, 120mA bus supply per DALI line. An extension of the bus supply is possible with [DALI Repeater](#) / [DALI Expander](#), or DALI-2 IoT4 with a separate DALI PS per DALI line; any lines 0-3 can be used/connected.



typical application: DALI-2 IoT4, a DALI power supply per DALI line is required; any lines 0-3 can be used/connected.

Installation

- The DALI-2 IoT4 requires a 24 V supply, which is connected to the terminals provided for this purpose (suitable power supply unit: [PS 24V, 300mA, article nr.: 24166012-24HS](#)).
 - DALI-2 IoT4 PS (22176625-PS):
 - The 4 DALI outputs (DA0-DA4) each have an integrated DALI PS (120mA per DALI line).
 - No additional DALI power supply may be connected to the DALI outputs. If additional DALI gears are required on the DALI lines, a [DALI Repeater](#) or [DALI Expander](#) can be added, alternatively the DALI-2 IoT4 with external DALI PS can be used instead.
 - The polarity of the output voltage is marked on the housing (DA+, DA-)
 - DALI-2 IoT4 (22176625):
 - The supply of the 4 DALI circuits (DA0-DA4) must be ensured by a suitable DALI bus power supply each (e.g. [DALI PS article nr.: 24033444](#)).
 - The connection to the DALI terminals can be made regardless of polarity. The bus input is protected against overvoltage (mains voltage).
 - The wiring should be carried out as a permanent installation in a dry and clean environment.
 - Installation may only be carried out in a voltage-free state of the system and by qualified specialists.
 - National regulations for setting up electrical systems must be followed.
 - The DALI wiring can be realized with standard low-voltage installation material. No special cables are required.
 - Only 1 wire may be connected to each terminal. When using double wire end ferrules, the connection capacity of the terminal must be considered.
 - The DALI-line must not be connected to the mains or extra low voltage systems
 - Wiring topology of the DALI-line: line, tree, star
-  Attention: The DALI-signal is not classified as SELV circuit (Safety Extra Low Voltage). Therefore, the installation regulations for low voltage apply.
-  Pay attention to the cable cross-section: the voltage drop on the DALI line must not exceed 2V at maximum length (300m) and maximum bus load (250mA).

Functionality

The DALI-2 IoT4 is a control unit with control functionality for the integrated 4 DALI lines as well as an interface for connecting the DALI system with smart devices via the Internet of Things (IoT) over the local network.

Available DALI functionality:

- Timer (recall DALI commands by date and time)
- Circadian control
- Sequencer (sequences of DALI commands)
- Trigger Actions to link the 4 DALI lines. (Forwarding commands from one line to another)

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- DALI Cockpit interface for configuring the DALI devices on the 4 DALI buses

The DALI-2 IoT4 offers the following interfaces:

- RestFul API
- Websocket Interface
- Modbus TCP Server (only for DALI commands)

The USB port on the device does currently not support any functionality.

Network Connection

The DALI-2 IoT4 is configured to automatically obtain an IP address using the DHCP protocol. If the DALI-2 IoT4 is unable to reach a DHCP server (e.g. when the DALI-2 IoT4 is directly connected to a PC) it falls back to the static IP address 169.254.0.1, and the subnet mask 255.255.0.0. after 1min.

If the DALI-2 IoT4 device is in a network and receives its IP address via DHCP, the IP-address can be determined using a "Discovery" protocol: The DALI-2 IoT listens to UDP packets on port 5555, containing discovery and reacts by sending back {"type": "dali-2-iot4"}. For detailed information see the DALI-2 IoT-API manual: [DALI IOT API documentation](#)

Network settings can be changed via the API documentation (http://<IP_ADDRESS of the DALI-2 IoT>/docs).

DALI Cockpit

The DALI-2 IoT4 Gateway can be used as an Interface to the Windows desktop application [DALI Cockpit](#) (Cockpit Version 1.38 or higher), for configuration of the DALI devices on the connected DALI bus.

The Windows PC from which the DALI Cockpit is used and the DALI-2 IoT4 need to be in the same local network.

To select the DALI-2 IoT4 as the DALI bus interface in the DALI Cockpit: choose the option "Network" and "DALI-2 Display, DALI-2 IoT, DALI-2 WLAN" and specify the device's IP address. If the IP address is not known, the network can be searched for devices using the button next to the IP address input field:



By selection the DALI-2 IoT4 is listed as an interface in the device list and can be used for addressing, monitoring and controlling the DALI bus.



[DALI Cockpit Manual](#)

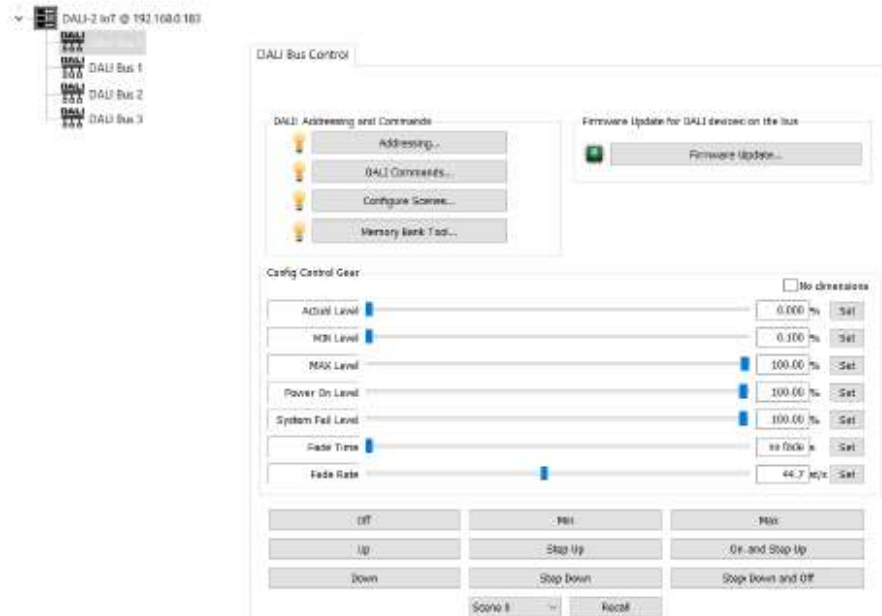


Figure 1 DALI Cockpit control and addressing per DALI line

DALI Control functionality

With the RestfulAPI, timer, sequencer, circadian control and trigger actions of the device can be set.

Alternatively, in one of the next DALI Cockpit releases, the settings can also be made via the DALI Cockpit.

Crossline functions - "Trigger Actions"

Links between the 4 lines can be created with the option "Trigger Actions". Thereby DALI control commands are forwarded to the defined addresses unidirectionally or bidirectionally between the lines.

This means that the address range of a button can be extended to other lines via forwarding. Broadcast, groups or addresses can be selected as a range.

The Trigger-Action function can also be used to implement more specific requirements, such as cross-bus control and synchronization of sensors.

Scheduler

The DALI-2 IoT4 has a programmable calendar function. The following parameters can be set for a scheduler entry:

- Name for the entry
- Effective range (zones and individual addresses, groups or broadcast on the individual lines, and across lines)
- time of the action
- Days (days of the week, days of the month) and months on which the action should be carried out
- action (DALI command)



Sequencer

The DALI-2 IoT4 allows the creation of sequences - an automatic playback of DALI command sequences.

A sequence consists of a series of a maximum of 16 DALI commands to, for example, implement a sequence of brightness and colour changes (scenes). Delays can be set between the commands. A sequence can be called once or with repetitions (loop). The effective range to be controlled can be defined across lines.

Circadian function

With the circadian function, the DALI IoT4 offers the possibility of automatically adjusting the colour temperature of DT8-capable tunable white luminaires. Two daily curves (for the longest and shortest day of the year, June and December) can be defined, each with 24 reference points.

The time is used to interpolate between the individual reference points. The same applies to the reference points depending on the date.

The colour temperature of the circadian curve is updated every minute.

The effective range that should be controlled by the circadian curve can be defined across all lines.

Interfaces

Restful API and Websockets

The API documentation and IoT functionalities are explained in more detail in the manual: [DALI IOT API documentation](#)

Basic services and API documentation are available at (http://<IP_ADDRESS of the DALI-2 IoT4>/docs).

Modbus TCP

The device offers a Modbus TCP server, via which DALI commands can be sent and status values can be queried. The Modbus interface does not offer any configuration options for the IoT4 device. The IoT4 does not contain a Modbus client, i.e. no information is output from the IoT4 device on the Modbus interface, so receiving DALI event messages or DALI monitor information via Modbus TCP is not possible.

Modbus TCP/IP is a variant of the serial Modbus communication protocol for TCP/IP networks via port 502. The following Modbus functions are supported:

Function Name	Function Code	Description
Read Multiple Holding Registers	03	Read Data Blocks From Device
Write Multiple Holding Registers	16	Write Data Blocks To Device
Read/Write Holding Registers	23	First Write, then Read from Specific Address, function used to send DALI commands

Using the write and read access to the Modbus registers, the individual DALI lines can be accessed directly (e.g. send DALI commands) or holding registers can be read (e.g. query the status and level of all DALI operating devices on a DALI line).

Details on access via Modbus registers can be found in the manual: https://www.lunatone.com/wp-content/uploads/2018/03/22176666_DALI-IoT4_Manual_EN_M000X.pdf

and the Modbus TCP application examples: <https://www.lunatone.com/wp-content/uploads/2021/01/DALI-2IoT4-access-via-Modbus-examples.pdf>



DALI-2 IoT4 Node RED

Art.Nr. 22176625-NR and 22176625-PS-NR

<https://nodered.org/>

Node-RED is a programming tool to connect hardware devices, APIs and online services. Many device interfaces are available in the Node-RED library.

The DALI-2 IoT Node-RED serves as a Node-RED host, which means that no additional device is required for Node-RED automations. After installing the DALI-2 IoT Node-RED, the Node-RED Editor can be accessed in any browser at <http://<IP ADDRESS of the DALI-2 IoT>:1880>

(If the Node-RED Editor cannot be reached, please check whether the PC and the DALI-2 IoT Node-RED are in the same network and address range.)

Nodes integrated in the DALI-2 IoT Node-RED (Art. Nr.: 89453886-NR) by default are:

- lunatone/node-red-dali
- node-red-dashboard
- node-red-contrib-modbus

Nodes can only be added by Firmware updates of the DALI-2 IoT. Integration of desired additional or other node such as e.g.:

- email
- string
- moment (datetime formatter)
- specific databases
- external services such as Zigbee, ifttt, homekit, aws, chatbots,...

<https://flows.nodered.org/>

as delivery configuration or as firmware update on request.

Node-RED application examples

Various applications for DALI-2 IoT and DALI 4Net are available, including:

Node RED Dashboard: for control and overview of sensor values.

The dashboard page can be opened via any browser, see example for dashboard in Figure 2, page 12. The dashboard can also be used for control via a smartphone, by selecting "Add to start screen" in the browser menu, the dashboard page can be called up like any other application:





DALI-2 IoT4 Node RED

Art.Nr. 22176625-NR and 22176625-PS-NR

<https://nodered.org/>

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- external services such as Zigbee, ifttt, homekit, aws, chatbots,...

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Example 1 - DALI control commands:
The creation of the buttons for sending control commands to the DALI bus is possible with the available Lunatone nodes.



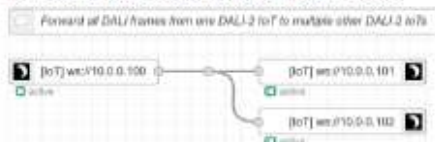
General DALI commands, Queries and more including DALI and DALI-2 are available by drop down – also including DALI-2 event messages.

With the additional function blocks in the application examples also DALI control macros can be easily implemented e.g.

- control of color temperature
- control of color via colour picker

Example 2 - network bridge: forwarding
between multiple DALI-2 IoTs for cross-bus control.

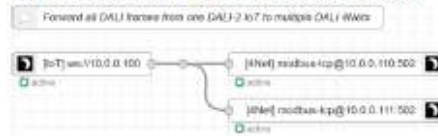
Forwarding between multiple DALI-2 IoTs:



Selective forwarding with filtering:



Forwarding from a DALI-2 IoT to a DALI4Net:

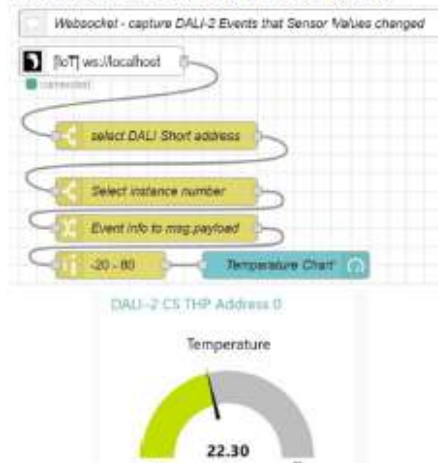


Example 3 - query device status: The light status of DALI devices can be queried and answers can be captured to display the status in the dashboard or add a following action.

Example 4 - sensor values:

Via the web socket connection the DALI-2 Sensor events can be captured and evaluated (DALI-2 event messages of the sensor need to be activated, alternatively the sensor needs to be queried periodically). The sensor values can be extracted from the bus traffic by filtering for the DALI-2 Sensor address and the DALI-2 Event message.

The received sensor values can be used for automations, triggering other actions, or simply to be displayed in the dashboard.



Download Examples:

Different application examples can be downloaded [here](#) as a Node-RED project and opened in the Node-RED Editor.

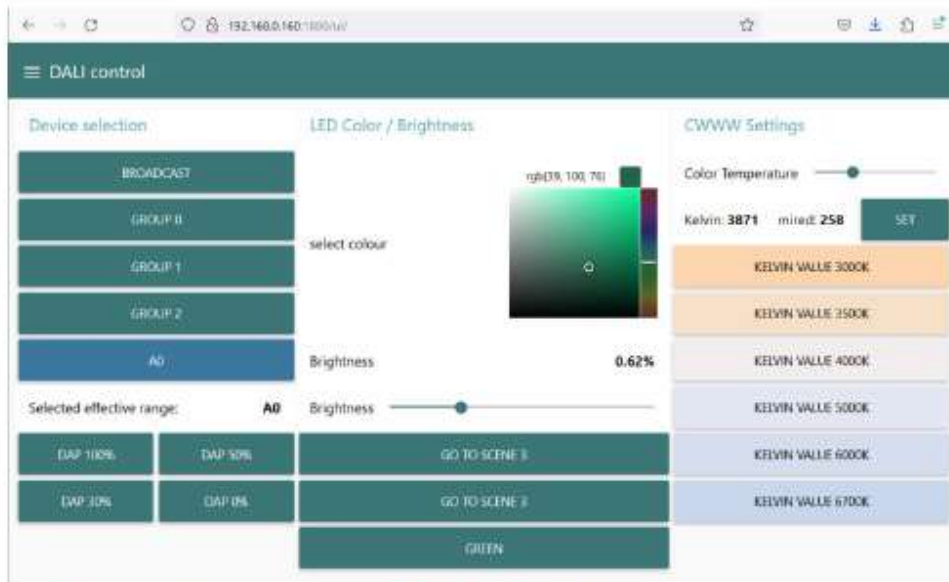


Figure 2 Example for DALI IoT Node RED Dashboard – Tab DALI Control

Web Interface

The DALI IoT web interface allows uploading of macros or loading firmware updates. The web interface can be accessed via a web browser, by entering the IP address of the display in the browser.

Information on the network settings and the IP address of the DALI IoT are in section “Network Connection”, page 7.

The PC, phone or tablet and the display must be in the same network and address range.

Cloud access

The DALI IoT interface can be accessed via cloud (tunneling of DALI commands, access to the node-RED host is not supported). Cloud support can be requested via cloudsupport@lunatone.com

Information can be found here:

<https://www.lunatone.com/en/product/lunatone-cloud-service/>

Firmware Update

Firmware updates are possible via the web interface of the DALI IoT, see section “Web Interface” on page 12.

On the web interface on the tab “Firmware update” the firmware update file (.ifu) can be uploaded and the update can be started using the “Upload” button, see also Figure 2 below.

The update can take up to 15 minutes. After an automatic restart of the device, the update is complete.

Attention: The device should only be updated not downgraded, a downgrade will lead to data-loss.

Attention: With the browser “Microsoft Edge” problems can occur during updates. It is recommended to use a different browser for firmware updates.

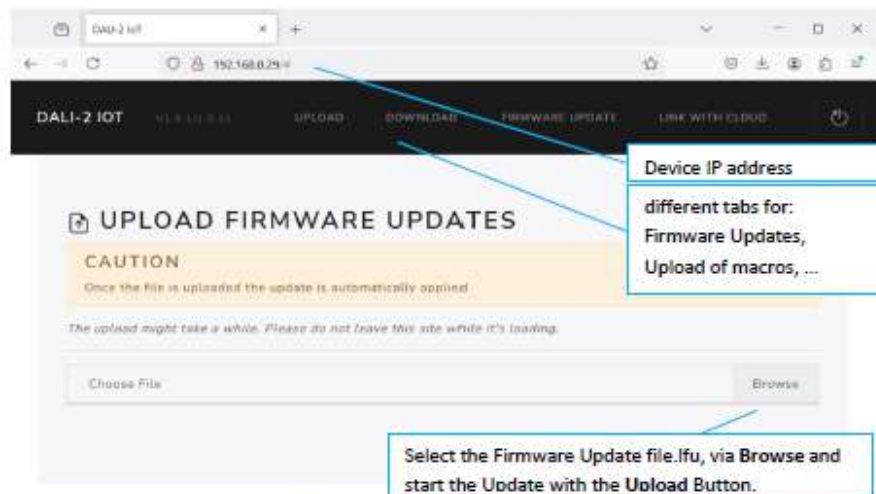


Figure 3 web interface - tab Firmware Update

Purchase Order Information

Art.Nr. 22176625: DALI-2 IoT4, DALI – LAN interface, 4 DALI lines

Art.Nr. 22176625-PS: DALI-2 IoT4, DALI – LAN interface, 4 DALI lines, integrated DALI power supply per line 120mA

Art.Nr. 22176625: DALI-2 IoT4, DALI – LAN interface & node RED host, 4 DALI lines

Art.Nr. 22176625-PS: DALI-2 IoT4, DALI – LAN interface & node RED host, 4 DALI lines, integrated DALI power supply per line 120mA

Accessories:

Art. Nr.: 24166012-24HS, 24VDC/300mA power supply, DIN rail

Additional Information and Equipment

DALI-2 IoT API manual

https://www.lunatone.com/wp-content/uploads/2021/08/89453886_DALI2_IOT_API_Dokumentation_EN_M0023.pdf

DALI-2 IoT Node Red examples

www.lunatone.at/projects/Display_and_IoT/IoT-Node-RED-examples.zip

DALI-Cockpit – free configuration tool from Lunatone for DALI systems

<https://www.lunatone.com/en/product/dali-cockpit/>

Lunatone DALI products

www.lunatone.com/en/

Lunatone datasheets and manuals

www.lunatone.com/en/downloads-a-z/



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DALI-2 MC

Datasheet **Multi Control Device**



DALI control module with four
potential-free inputs
for push-buttons and switches

L-86459532-2-app
GTIN 9010342013492
factory default setting: **App-Controller activated**

L-86459532-2-int
GTIN 9010342013492
factory default setting: **Instances activated**

L-86459532-NFC
GTIN 9010342012730
factory default setting: **App-Controller activated**



DALI-2 MC Control Device

Overview

- Compact DALI-2 control module with 4 potential-free inputs
- Multi-master capable: Several modules can be installed within a DALI circuit.
- Different DALI commands can be assigned to each input
- Integrated DALI-2 application controller
- Four DALI-2 pushbutton instances are available for an easy integration
- In addition to the standard DALI commands, the application controller also supports DALI DT8 TC and RGB (W) control
- short button press, long button press (with repetition for dimming) and «toggle» are supported
- Suitable for push-buttons, as well as switches
- New: Alternative button function: A second function can be assigned to each input. Activated / deactivated via a scene command or switch at input 4. Thus, Offering an easy solution to the partition wall problem.
- With the application controller Sequences, macros and other functions can be realized.
- Easy configuration via Lunatone DALI USB interface and DALI-Cockpit Software Tool.
- New: NFC variant for simple, contactless configuration with the Lunatone NFC smartphone app
- Easy installation: the device can be installed in a flush-mounted installation box and is supplied via the DALI bus
- DALI-2 control unit according to IEC62386-103





Specification, Characteristics

Type	DALI-2 MC	DALI-2 MC integration	DALI-2 MC NFC
article number	L-86459532-2-app	L-86459532-2-int	L-86459532-NFC
GTIN	GTIN 9010342013492	GTIN 9010342013492	GTIN 9010342012730
factory default setting	App-Controller activated	Instances activated	App-Controller activated

DALI interface, power supply: DA, DA

output type	DALI, DALI-2, Multimaster
terminal markings	DA, DA
voltage range	9,5V ... 22,5Vdc according to IEC62386
typical current consumption DALI (16,5V)	1.7 mA
max. current consumption DALI (22,5V)	2 mA
DALI addresses	none
DALI-2 addresses	1

input

Inputs for	Potential free button/switch
number of inputs	4
marking input terminals	T1, T2, T3, T4, COM
minimum length of control pulse	40ms
control pulse length for long press	configurable: 200-5100ms
max wire length	50cm

insulation data:

impulse voltage category	II
pollution degree	2
rated insulation voltage	250V
insulation DALI / mains	reinforced isolation
insulation test voltage DALI / mains	3000Vac

environmental conditions:

storing and transportation temperature	-20°C ... +75°C
operational ambient temperature	-20°C ... +75°C
rel. humidity, not condensing	15% ... 90%

general data:

dimensions (l x w x h)	40mm x 28mm x 15mm
mounting	back box installation, installation in protection class II devices
rated maximum temperature tc	75°C
expected life time	200.000h
protection class	SKII (when used/installed as intended)
protection degree housing	IP40
protection degree terminals	IP20





terminals:	
connection type	spring terminal connectors
wire size: solid core	0,5 ... 1,5 mm ² (AWG20 ... AWG16)
wire size: fine wired	0,5 ... 1,5 mm ² (AWG20 ... AWG16)
wire size: using wire end ferrule	0,25 ... 1 mm ²
stripping length	8,5 ... 9,5 mm / 0,33 ... 0,37 inch
tightening/ release of wire	push mechanism
standards :	
DALI	IEC62386-101:2014 IEC62386-103:2014
EMV	EN 61547 EN 50015 / IEC C15PR15
safety	EN 61347-2-11 EN 61347-1
Markings	DALI-2, CE

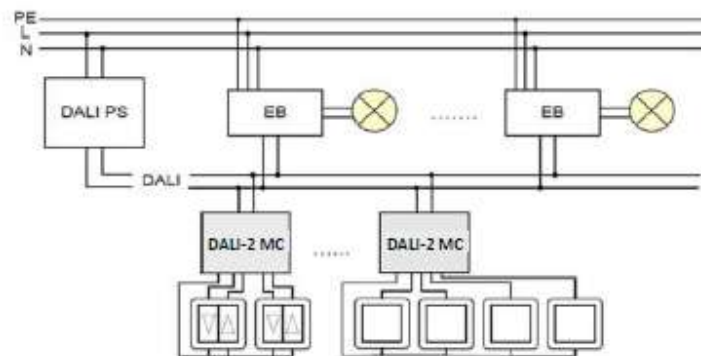
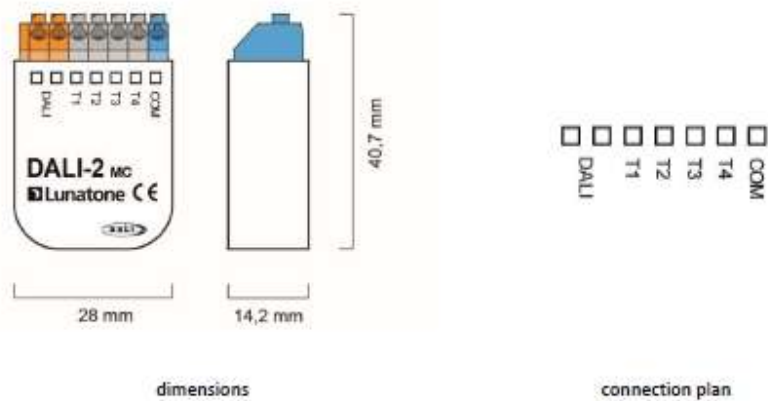


Fig. 1 Typical Application





Installation

- The DALI-2 MC can be installed in a flush-mounted installation box
- The device is directly connected and supplied by the DALI bus. A DALI bus power supply (e.g. DALI PS) is required.
- The connection to the DALI terminals can be made regardless of polarity. The bus input is protected against overvoltage (mains voltage).
- The wiring should be carried out as a permanent installation in a dry and clean environment.
- Installation may only be carried out in a voltage-free state of the system and by qualified specialists.
- National regulations for setting up electrical systems must be followed.
- The DALI wiring can be realised with standard low-voltage installation material. No special cables are required.
- Only 1 wire may be connected to each terminal. When using double wire end ferrules, the connection capacity of the terminal must be considered.
- The maximum cable length of the button connections is 50cm. If a longer connection line is required, please use DALI MC-4L.



Attention: The DALI-signal is not classified as SELV circuit (Safety Extra Low Voltage). Therefore, the installation regulations for low voltage apply.



The voltage drop on the DALI line must not exceed 2V at maximum length (300m) and maximum bus load (250mA).

Typical application

see Fig. 1. page 4

Addressing and Configuration

- After installation, the device can already be used with the default factory settings.
- DALI-2 MC: Addressing and changes to the factory settings, such as setting the effective range and functions, are possible with the Software tool DALI Cockpit (Windows PC).
- DALI-2 MC NFC: Addressing and changes to the factory settings, such as setting the effective range and functions, are possible with the Software tool DALI Cockpit (Windows PC) and the Lunatone DALI NFC smartphone app.
- When using the DALI-Cockpit Software, the PC must be connected to the DALI bus via a suitable interface module (DALI USB, DALI 4Net, DALI SCI RS232). The DALI-2 MC is automatically recognised by the DALI Cockpit during the addressing process and listed in the device overview. Effective range and desired functions can then be assigned to each input.
- The addressing is done according to the DALI-2 specification and the device receives a corresponding address.
- For localisation a buzzer is integrated in each DALI-2 MC device. Alternatively, the



allocation can also be done via the serial number of the device.

identifies and adds the input connections (T1 to T4 on the device) to the device list.

- Physical selection: At the end of the addressing process, by double-clicking the physical button, the DALI Cockpit

Operation and function

The DALI-2 MC is a universal module to control DALI-compatible lights. The function of each push button input can be set individually.

As with other Lunatone control devices, the settings can be made with the DALI Cockpit Software tool.

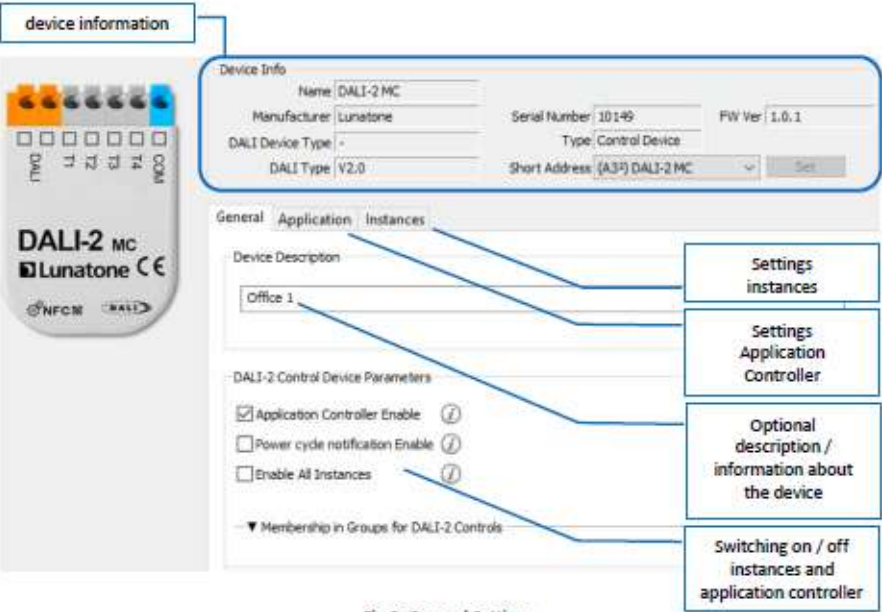


Fig. 2: General Settings



It is necessary to distinguish between application controller and DALI-2 instances.

The application controller gives direct DALI control commands that are immediately executed by the DALI drivers.

The DALI-2 instances generate event messages that are interpreted and processed by higher-level control units (WAGO, Beckhoff, LUNATONE DALI-2 KNX gateway).

Device Info

Name: DALI-2 MC
Manufacturer: Lunatone
DALI Device Type: -
DALI Type: unknown

Serial Number: 1
FW Ver: 2.7
Type: Control Device
Short Address: (A02) DALI-2 MC

General Application

Input 1 Input 2 Input 3 Input 4

Standard config Alternative config

Destination Addresses

1:	Group	Group 0 (G0)
2:	none	
3:	none	
4:	none	

Function: BF6 - Dim button: CmdX/CmdY/UP/DOWN depending on actual Light Level

☐ sending ON AND STEP UP as Start-Cmd ☒ Dim Up ☒ Dim Down

Command X

Light Level: 100 % Fade time: [1] 0.7 sec

Command Y

RECALL MIN LEVEL

Interpret scene commands as:

☐ On ☐ Off ☒ Ignore

Fig. 3: Application: Application Controller



Configure inputs 1-4

Destination address / effective range

Here you can set which devices are affected by the button function. Possible destination addresses:

- Broadcast (an alle)
- DALI group (0 - 15)
- DALI single address (0 - 63)

Up to 4 different target addresses can be defined for each button input. When the button is pressed the target addresses 1 to 4 will be processed sequentially (see Fig. 4)



Fig.4 Example: Addressing Inputs 1-4 – sequentially processed

Button Function (BF)

Various "Button Functions" (BF) can be assigned to the individual buttons. The "Button Function" defines the behaviour of a button. A short or long press of the button can trigger different DALI commands. A toggle

function (switching between on and off) is also possible.

Key presses (short / long) are queried according to the following timing diagram and translated into internal signals (key events):

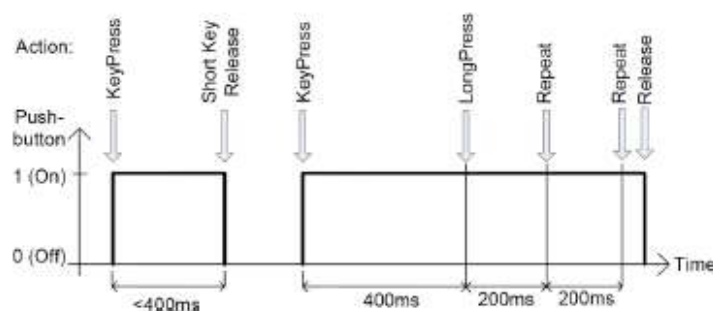



Fig.5 Key Events





The following table shows how the selected "Button Function" (lines 0 to 13) sends the commands CmdX and CmdY in connection with the "Key Events" (see Fig. 5). CmdX and CmdY refer to DALI commands.

 **Note:** The DALI commands are transmitted to all assigned target addresses.

button function number (BF)	event: key press	event: release after short press	event: long press	event: repeat	function	typical application
0	-	-	-	-	-	-
1	CmdX	-	-	-	sends CmdX on key press	master off
2	CmdX	-	CmdY	-	sends CmdX on key press sends CmdY after long press delay	switch to 2 different levels
3	CmdX	-	CmdY	CmdY	sends CmdX on key press sends CmdY with 200ms repetition after long press delay	switch on and dim
4	CmdX / CmdY toggle	-	-	-	sends CmdX and CmdY alternating on key press	toggle push button (impulse switch)
5	CmdX / CmdY toggle	-	-	-	CmdX/Y depending on bus status	changeover push button
6	-	CmdX / CmdY toggle	ON and STEPUP	UP / DOWN	CmdX/Y depending on bus status, UP/DOWN alternating, ON AND STEPUP, if bus state is OFF before UP	push and dim button
7	CmdX	CmdY (any release)	-	-	sends CmdX on press ("switch on"-transition), sends CmdY on release ("switch off"-transition)	switch
8	CmdX / CmdY toggle	CmdX / CmdY toggle (any release)	-	-	sends CmdX/Y on press or release ("switch on/off"-transition) depending on bus status	changeover switch
9	CmdX	-	-	-	Staircase control. CmdY is sent after a programmable delay.	staircase control
10	-	CmdX	CmdY	CmdY	CmdX after short press, CmdY for repeat	push and dim button
11	CmdX	-	-	CmdY	Sends CmdX; repeats CmdY without long press delay	push and dim button
12	CmdX	CmdY	-	CmdX	CmdX with repeat; if button is released within short press time, CmdY is sent	dim button
13	CmdX	CmdY	-	COOLER/WARMER	Alternating COOLER / WARMER	Tunable white dim button

Tab. 1



Commands:

The actual action (which function is triggered when pressing a button) is determined by the button function and command assigned to the button.

In most cases, an X command (CmdX) and also a Y command (CmdY) can be selected.

The following options are available:

Command number	Command name	action / function
no Nr.	DIRECT ARC POWER	direct arc power Level in %
0	OFF	off
1	UP	dim up (using fade rate)
2	DOWN	dim down (using fade rate)
3	STEP UP	increases light level by one increment
4	STEP DOWN	decreases light level by one increment
5	RECALL MAX	recalls MAX value
6	RECALL MIN	recalls MIN value
7	STEP DOWN AND OFF	decreases light level by one increment, if value at MIN switch off
8	ON AND STEP UP	increases light level by one increment, if OFF switch on
10	GOTO LAST ACTIVE LEVEL (DALI 2)	DALI-2-Cmd for switching on to the last active level (Memory-Function)
16-31	GO TO SCENE	go to scene 0-15

Tab. 2

Predefined macros:

Macros are predefined/ user defined command sequences that can be triggered by a single button press.

The following macros are available:

Nr	Makro	Funktion
M1	Go Home	Light dims down to DAP 0 with predefined fade time, then fade time is set back to a programmable value
M2	Sequential Scenes	A list of the scenes can be defined; the scene is switched with each button press.
M3	Dynamic Scenes	A dynamic sequence of up to 16 scenes can be defined, including custom fade times and delays.
M4	Save actual light level as scene	When triggered the current level is saved in a scene (options: light level, RGB colour value, WAF colour value or colour temperature).
M5	User Defined Cmd-List	A user-defined macro script with up to 19 commands is executed.
M6	TC cooler	Activates the DT8 mode and sends the command "COOLER" 3 times.
M7	TC warmer	Activates the DT8 mode and sends the command "WARMER" 3 times.
M8	Send RGB +	Activates the DT8 mode and sends an ascending RGB color table value.
M9	Send RGB -	Activates the DT8 mode and sends a descending RGB color table value.
M10	Delayed Off	Sends a DAP level and after a delay the OFF command. DAP level and delay are user defined.

Tab. 3

Depending on the selected command, additional input fields might appear for further settings:

Command X

Light Level:

Fade time

Light Level (DAP) ▾

100 %

[1] 0.7 sec ▾

Fig. 6 Example for CmdX: DAP additional inputs: Light Level and Fade time



New: Alternative configuration

An alternative/second configuration can be made for each button. All previously

explained configuration options and settings are available. The alternative configuration can be recalled with button input 4 or a scene command.

Fig. 7 Settings for the alternative configuration

Activate / deactivate the "Alternative Configuration":

- "Disabled": the function is switched off, there is only the standard configuration
- "Activation by Input 4": the standard and alternative configuration are switched

with a button connected to input 4.

- "Activation by Scene Commands": scenes can be selected which will activate / deactivate the alternative configuration





Interpretation of scene commands when using toggle function

In order to correctly trigger the on and off commands with the toggle function, scene calls must be interpreted correctly. It is possible to set whether a scene should be interpreted as Off or On (Fig 8).

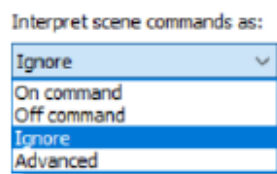


Fig. 8

factory default setting:

A basic configuration is already implemented on delivery (factory default setting). If necessary, this can be changed and adapted.

factory default setting:

Destination address: broadcast
 Input T1: BF6 - dimming button depending on the lighting status, RECALL MAX / OFF and UP / DOWN
 Input T2: BF10 button - short press: maximum, long press: dim up
 Input T3: BF10 button - short press: switch off, long press: dim down
 Input T4: BF13 - Tunable White dimming button - alternating COOLER / WARMER

DALI-2 instances

In this operating mode, no DALI control commands are sent on the bus, but DALI-2 event messages for DALI-2 compatible central control systems.

The DALI-2-MC supports 4 instances of type 1 (IEC62386-301, Input Devices - Push Button), which are assigned to the 4 button inputs. As defined in the standard, the following events are supported and sent on the DALI bus as INPUT NOTIFICATIONS:

Event name	Event Information	Description
Button released	00 0000 0000b	The button is released
Button pressed	00 0000 0001b	The button is pressed
Short press	00 0000 0010b	The button is pressed and released, without being pressed quickly again (in case of double press enabled), or the button is pressed and quickly released (in case of double press disabled)
Double press	00 0000 0101b	The button is pressed and released, quickly followed by another button press
Long press start	00 0000 1001b	The button is pressed without releasing it
Long press repeat	00 0000 1011b	Following a long press start condition the button is still pressed, the event occurs at regular intervals as long as the condition holds
Long press stop	00 0000 1100b	Following a long press start condition, the button is released
Button free	00 0000 1110b	The button has been stuck and is now released
Button stuck	00 0000 1111b	The button has been pressed for a very long time and is assumed stuck.

Tab.4

Further parameters of the instances 1-4 are: event filter, event timer settings (short timer, double timer, repeat timer, stuck timer), which can be configured via the DALI Cockpit Software.

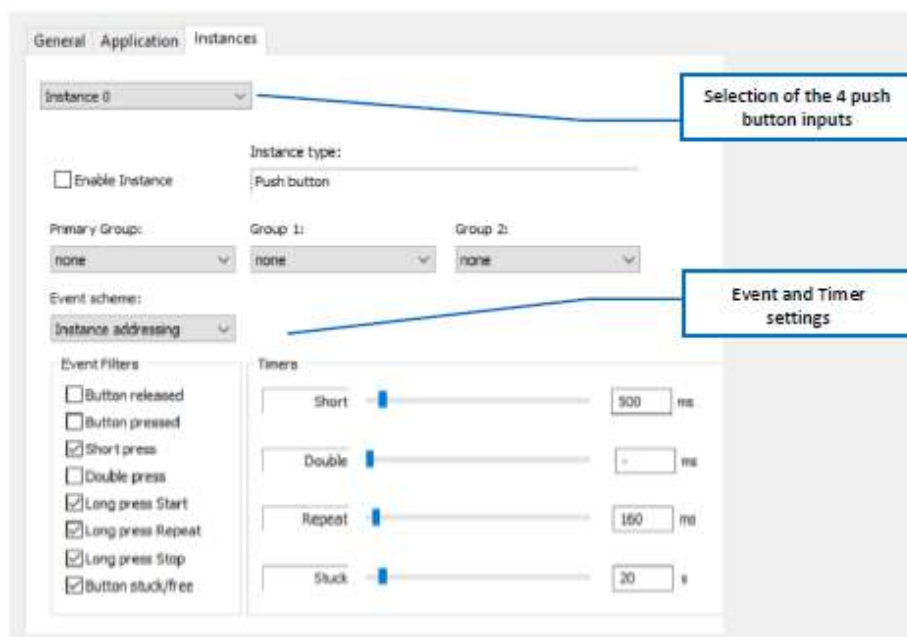


Fig. 9 Instance Settings



NFC-Version (L-86459532- NFC)



Fig. 10

In addition to the DALI Cockpit Software, the DALI-2 MC NFC includes a nearfield communication interface. This allows configuration over the NFC interface and a smartphone app.

- The DALI-2 MC does not have to be connected to a DALI power supply for configuration with NFC, it is supplied directly via NFC.
- The functions required to operate the application controller can be configured with the Lunatone DALI NFC App.
- Easy to use smartphone app for quick configuration in the field as well as preparation before installation.
- Fast transfer and copying of device settings

App Download:

The Lunatone "DALI NFC" app is available for Android devices on the Play Store.



Connect:

- Switch on the NFC function and start the "DALI NFC" app.
- This is followed by the request to pair an "NFC-enabled device".
- As soon as the DALI-2 MC NFC is within range (indicated by signal tone / vibration) the device is automatically read out and shown on the display.



Fig. 11 NFC App Start Screen

It is important that the NFC antennas of the two devices are as close as possible to each other. The position of the antenna is marked on the DALI-2-MC-NFC:



Fig. 12

For information on the NFC interface of your smartphone please check the instructions of the device manufacturer.



Lunatone DALI NFC App

The configuration options are the same as in the DALI Cockpit, see section "Operation and function" page 6 for further information.

The screenshot shows the 'DALI-2 MC' configuration screen in the Lunatone DALI NFC App. The interface is divided into several sections, each with a corresponding callout box on the left:

- device information:** Points to the top section showing a photo of the DALI-2 MC device, its description, firmware version (V1.0), and the manufacturer's website (http://www.lunatone.com).
- device address:** Points to the 'Addressing' section, which displays the current address (3) and the control device groups (none).
- Device settings of the 4 push button inputs:** Points to the 'Device Settings' section, which lists the settings for Input 1, 2, 3, and 4.
- selection which push button input (T1 - T4) should be configured:** Points to the 'Input 1' tab in the 'Device Settings' section.
- Destination addresses:** Points to the 'Destination Address' section, which lists the group and none addresses for each input.
- selection of button function behaviour:** Points to the 'Function' section, which lists the function (BF1: PUSH BUTTON) and the command (RECALL MAX LEVEL).
- DALI command / function:** Points to the 'CmdX (On Command)' section, which shows the command (RECALL MAX LEVEL).
- "Save to device": parameters are saved on the device:** Points to the 'SAVE TO DEVICE' button at the bottom of the screen.

At the bottom left, there is a note: "Macros and instances cannot be set via NFC."

Fig. 13





Purchase Information

L-86459532-2-app

DALI-2 MC:

factory default setting: **App-Controller**
activated

GTIN 9010342013492

L-86459532-2-int

DALI-2 MC integration:

factory default setting: **instances**
activated

GTIN 9010342013492

L-86459532-NFC

DALI-2 MC NFC:

factory default setting: **App-Controller**
activated

GTIN 9010342012730

Contact

Technical support : tecnico@sicom-pd.it

Request: sicom@sicom-pd.it

www.sicom-pd.it



Disclaimer

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The function in installations with other devices must be tested for compatibility in advance.

Additional Information and Equipment

DALI Cockpit - free configuration software for DALI systems

<https://www.lunatone.com/en/product/dali-cockpit/>

Lunatone DALI products

<https://www.lunatone.com/en>

Lunatone Datasheets and Manuals

<https://www.lunatone.com/en/download/s-a-z/>

Lunatone DALI NFC App

<https://play.google.com/store/apps/detail?id=com.lunatone.dalinfrc&hl=de>





DALI PS



Datasheet

DALI Bus Power Supply Unit

DALI-line power supply

L-24033444



DALI PS Bus Power Supply

Overview

- DALI bus power supply unit
- guaranteed Supply Current 220mA
- maximum Supply Current 250mA
- suitable to power an entire DALI-line with 64 standard DALI ballasts
- suitable for dinrail mounting
- power supply range 120Vac ... 240Vac for worldwide use
- surge immunity up to 400V
- load indicator
- integrated test button for function check
- system status queries (DALI current, bus load, runtime etc.) with DALI-Cockpit Software



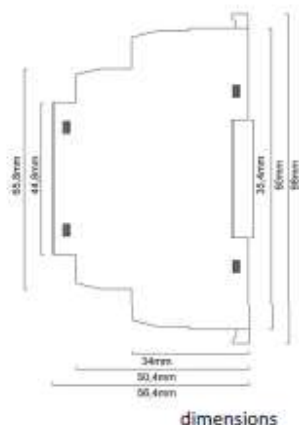
Specification, Characteristics

type	DALI PS
article number	L-24033444
input: L, N	
input type	mains power supply
marking input terminals	L, N
input voltage range	120Vac ... 240Vac
max. input supply current	40mA (@120Vac), 20mA (@240Vac)
input supply frequency	50Hz / 60Hz
power consumption max.	5,3W
startup time	250ms
output: DA+, DA-	
output type	DALI Supply
marking output terminals	DA+, DA-
output voltage range	12Vdc ... 20,5Vdc
DALI supply current	250mA
guaranteed DALI supply current	220mA
max. DALI supply current	250mA
open circuit proof	yes
short circuit proof	yes
shut down on short circuit	yes
insulation data:	
impulse voltage category	II
pollution degree	2
rated insulation voltage	250V
rated impulse withstanding voltage	4kV
insulation DALI / mains	reinforced isolation





Insulation test voltage DALI / mains	3000V a.c.
enviromental conditions:	
storing and transportation temperature	-20°C ... +75°C
operational ambient temperature	-20°C ... +55°C
rel. humidity, none condensing	15% ... 90%
general data:	
dimensions (l x w x h)	98mm x 17,5mm x 56mm
mounting	dinrail
rated maximum temperature tc	75°C
expected life time @tc	50.000 h
protection class	II in intended use
protection degree housing	IP40
protection degree terminals	IP20
terminals:	
connection type	screw connector
wire size solid core	0,5 ... 2,5 mm ² (AWG 20 ... AWG 14)
wire size fine wired	0,5 ... 2,5 mm ² (AWG 20 ...AWG 14)
wire size using wire end ferrule	0,25 ... 1,5 mm ²
stripping length	7 mm / 0,27 Inch
locking torque	0,5 Nm
standards:	
DALI	EN 62386-101:2014
EMC	EN 61547 EN50015 / IEC CISPR15
safety	EN 61347-2-11 EN 61347-1
markings	DALI-2, CE, ENEC, cURus
UL file number	E495951



connectors





Installation

- The DALI PS is intended for dinrail mounting
- Ensure protection against electric shock by an appropriate enclosure
- Wiring as fixed installation in a dry and clean environment
- Installation only by qualified person when no voltage is applied
- Attend regulations regarding electrical installations of national authorities
- connect power supply terminals L and N to mains voltage
- the polarity of the output voltage is marked on the housing (DA+, DA-)
- The DALI-line may be installed within the same cable or as single conductors within the same tube as mains supply
- The DALI-line must not be connected to the mains or other extra low voltage systems

- DALI-line wiring with standard low voltage installation material
- Wiring topology of the DALI-line: Line, Tree, Star
- Wiring check by pressing the test button: the green led is flashing and all luminaires connected to the DALI system will be controlled by a test sequence (on, off, dimming). To quit the test mode press the test button again.



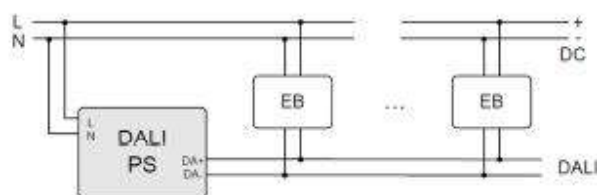
HINT: The DALI-signal is not classified as SELV circuit. Therefore the standards for installation in low voltage system apply.



The voltage drop on the DALI-line shall not exceed 2V.



HINT: an improper DALI power supply can cause damage on DALI devices!



wiring diagram



Commissioning

- The DALI power supply is ready for use
- Make sure that the guaranteed supply current exceeds the current consumption of all bus devices
- Status-LED:
 - green: normal operation
 - green flashing: overload/short circuit
- The DALI PS is recognized during the addressing procedure and is shown in the DALI Cockpit. System parameters (bus load, DALI current, runtime etc.) can be read out and the behaviour on system events (power on, return of DALI voltage after a system failure) can be configured.



Purchase Order Information

L-24033444: DALI PS, guaranteed DALI supply current 220mA, din rail

Additional Information and Equipment

DALI-Cockpit – free configuration tool from Lunatone for DALI systems
<http://lunatone.at/de/dali-systeme/software/>

Lunatone DALI products
<http://www.lunatone.at/de/>

Lunatone datasheets and manuals
<http://lunatone.at/de/downloads/>

Technical support : tecnico@sicom-pd.it
Request: sicom@sicom-pd.it

www.sicom-pd.it



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DALI-2 CS

Datasheet

Combi Sensor Modul

DALI sensor module
for motion detection,
light detection
and lighting control

Master device:
application controller active

L-86458670



Detection range variants: -15, -O, -30, -C
Colour variants: -W16, -B
Installation type variants: -ZD, -AP



DALI-2 Combi Sensor - Multifunctional Sensor Module

Overview

- ☑ Sensor Module for DALI and DALI-2 lighting systems
- ☑ Movement detection (PIR) instance type 2 (L-62386-303) and light intensity measurement instance type 3 (L-62386-304)
- ☑ 4 operating modes:
 - Movement triggered
 - Movement triggered with constant light control
 - Constant light control
 - Light control (4 thresholds)
- ☑ Operating modes can be changed via scenes and external DALI commands
- ☑ Corridor function – second light level before off in case of absence
- ☑ Light threshold-controlled regulation for the control of blinds or roller blinds
- ☑ The module can be used as a DALI light controller or just as sensor unit for integration in building management systems
- ☑ Easy configuration via DALI-Cockpit Software Tool and Lunatone DALI USB interface.
- ☑ Multiple sensor modules can be installed within a DALI system.
- ☑ Automatic synchronisation of multiple DALI-2 CS modules with the same effective range
- ☑ Supply via the DALI bus, no additional power supply needed
- ☑ Double terminals for easy installation
- ☑ Optimized types for different applications and detection areas (hall, office, long distance, corridor) available
- ☑ Different colour variants: pure white (RAL9010), traffic white (RAL9016), and black.



Specification, Characteristics

type	DALI-2 CS				
article number	L-86458670	L-86458670-15	L-86458670-O	L-86458670-30	L-86458670-C
application	standard	hall	office	long distance	corridor
electrical data					
supply	via DALI signal line (DALI-voltage according IEC62386)				
marking terminals	DA, DA				
typical current consumption DALI	3.5 mA				
power consumption	<100mW				
control	DALI				

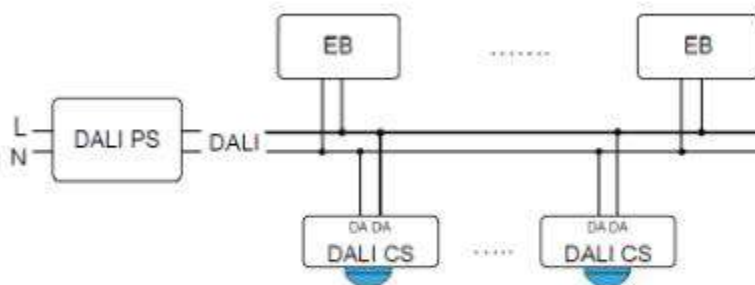


article number		L-86458670	L-86458670-15	L-86458670-O	L-86458670-30	L-86458670-C
insulation data						
impulse voltage category		II				
pollution degree		2				
rated insulation voltage		250V				
rated impulse withstanding voltage		4kV				
insulation DALI/housing		reinforced isolation				
insulation test voltage		3000Vac				
environmental conditions						
storing and transportation temperature		-20°C ... +70°C				
operational ambient temperature		-20°C ... +60°C	-20°C ... +55°C	-20°C ... +60°C	-20°C ... +60°C	-20°C ... +60°C
rel. humidity, none condensing		15% ... 90%				
technical data						
Motion Detection (62386 -303)						
principle		PIR	PIR	PIR	PIR	PIR
detection range (at >8°C temperature difference)		12m	15m	2.3m / 3m	30m	5m
typical mounting height		8m	12m	3m	15m	88+16
zones		92	128	36 / 48	188	-
horizontal		±51°	±34,5°	±44°/±90°	±43°	±75°
vertical		±46°	±34,5°	±44°/±90°	±22°	+10°/-25°
min. temperature difference		>4°C	>4°C	>4°C	>4°C	>4°C
details		Figure 1, page 5	Figure 2, page 6	Figure 3, page 6	Figure 4, page 7	Figure 5, page 7
light sensor (62386-304)		range: 0-2047lux (11bit), resolution: 1lux event:0-2047lux(10bit), resolution: 2lux				
function		configurable				
general data						
protection class		II in intended use				
protection degree		IP20			IP20 or IP54 for art.nr. extend: "-IP54"	IP20
mounting		back box – dimensions see page 4 surface mounted (article number extension „-AP“) – dimensions page 5 suspended ceiling (article number extension „-ZD“) – dimensions page 5				
available colours		RAL9010 RAL9016 (article number extension „-W16“) Black (article number extension „-B“)				
functional versions		Standard: application controller and instances Version: Integration – only Instances (article number extension „-INT“)				
terminals						
connection type		spring terminal connector				
wire size solid core		0,5 ... 1,5 mm² (AWG20 ... AWG16)				
wire size fine wired		0,5 ... 1,5 mm² (AWG20 ... AWG16)				
wire size using wire end ferrule		0,25 ... 1,5 mm²				
stripping length		8,5 ... 9,5 mm / 0,33 ... 0,37 inch				

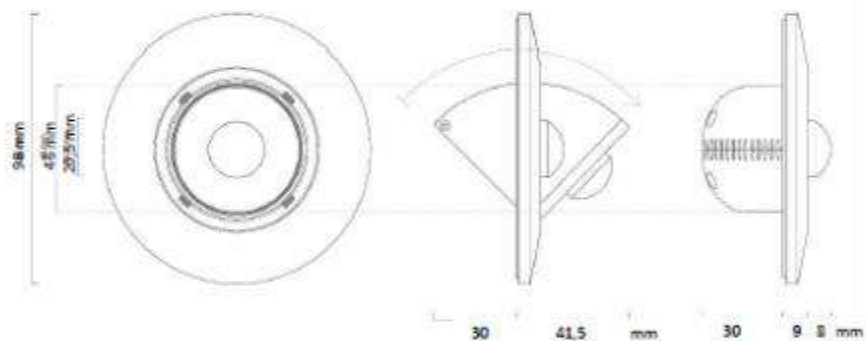


4

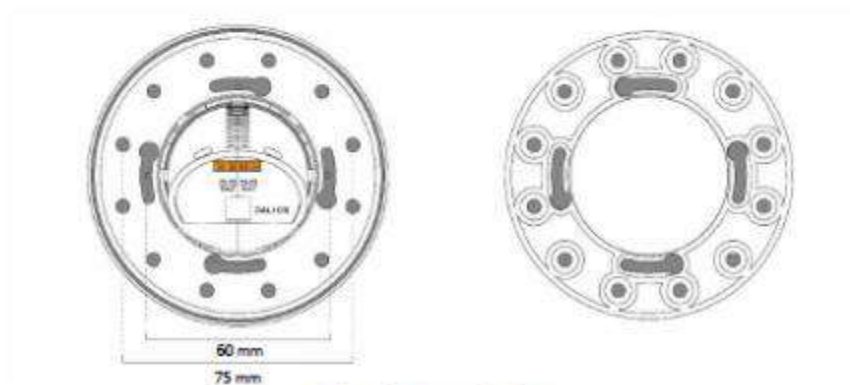
standards	
EMC	EN 61547 EN 55015
safety	EN 61347-2-11 EN 61347-1
markings	ENEC-11, CE



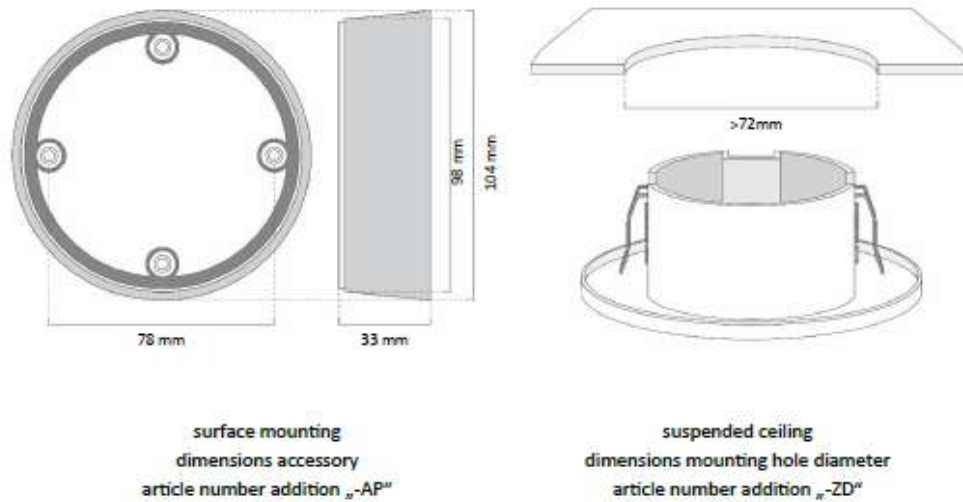
typical application: several sensors on one DALI-line



dimensions and space requirements



dimensions mounting ring



Sensor types

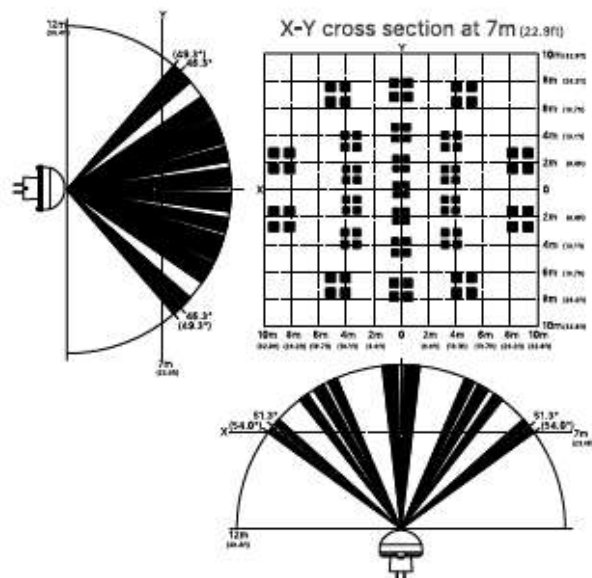


Figure 1 CS standard motion detection (Art. Nr.: L-86458670)
Detection area: X-Y cross section at 7m

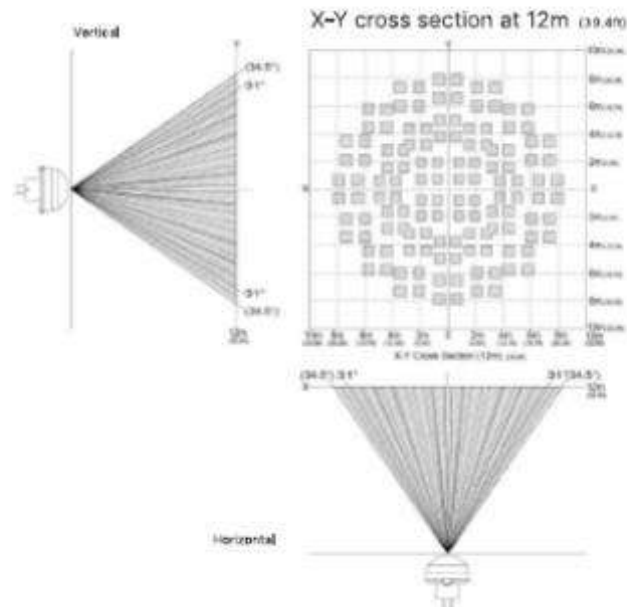


Figure 2 CS-15 hall motion detection (article number addition: L-86458670-15)
High density long distance detection type

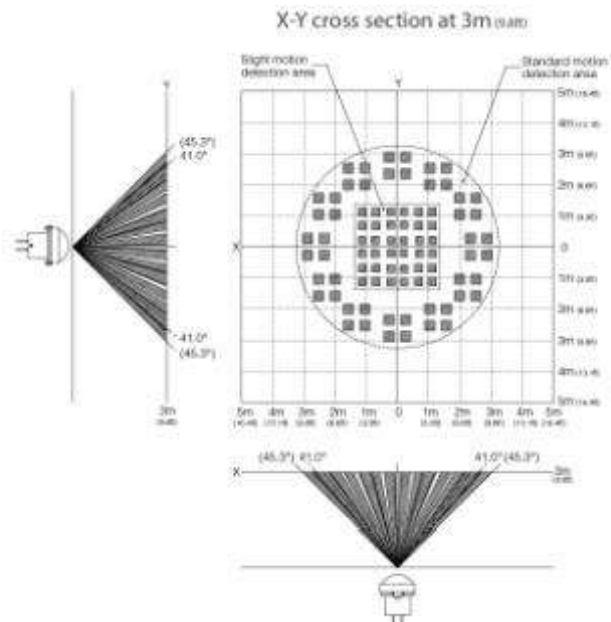


Figure 3 CS-O Office motion detection (article number addition: L-86458670-O)
Detection area: X-Y cross section at 3m - The rectangular centre zone is optimized for detecting smallest movements.

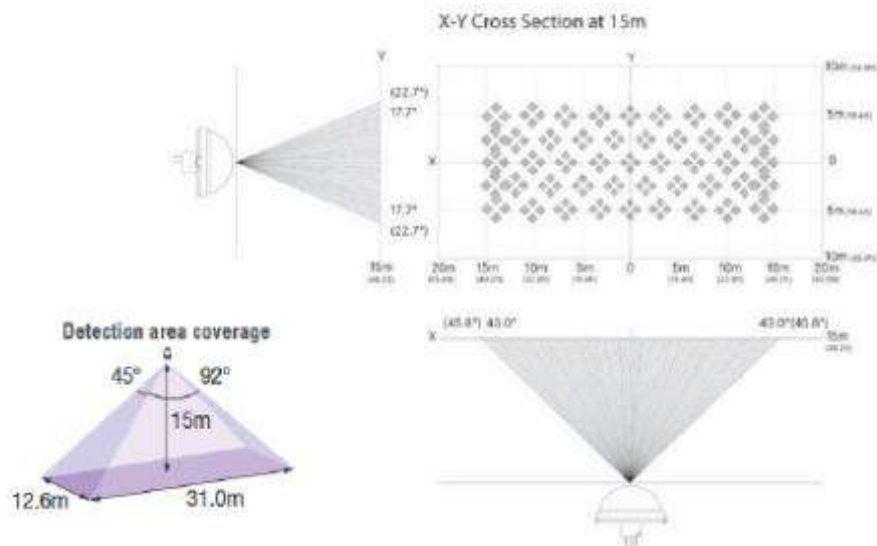


Figure 4 CS-30 long distance motion detection (article number addition: L-86458670-30)
High density, wide angle, long distance detection type for high bay applications

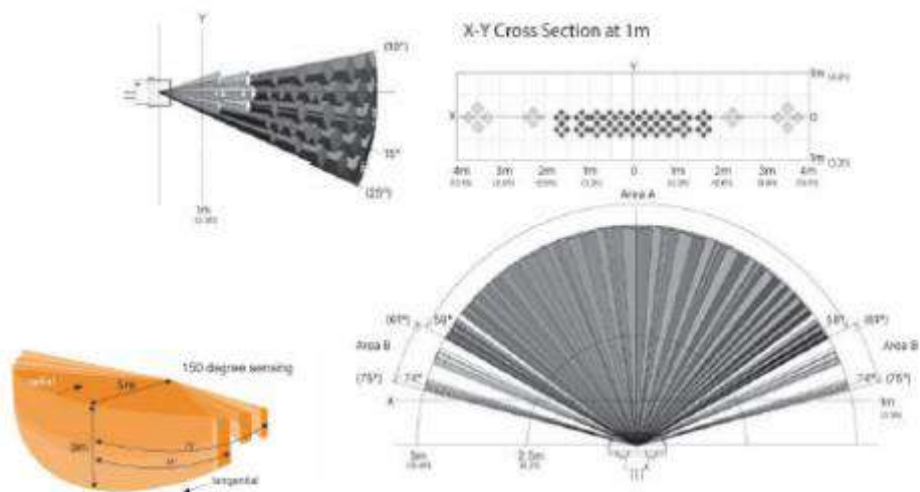


Figure 5 CS-C Corridor motion detection (article number addition: L-86458670-C)
Detection area: X-Y cross section at 1m - wide angle for corridors.



Factory Setting

For simple applications the factory settings are sufficient. The device configuration can be changed via the [DALI Cockpit](#) and adapted to the current application.

	DALI-2 CS Art. Nr.: L-86458670	DALI-2 CS Integration Art.Nr.L-86458670-INT
DALI-2 Settings	Application Controller – Master Mode	Instance Mode – Slave Mode
Operating Mode	Motion detection without constant light control, an external <i>ON command</i> deactivates motion detection until the next external <i>OFF command</i>	NA
Effective range	Broadcast	NA
ON command (1)	Recall Max	NA
Hold Time (2)	10min	NA
Absence value (3)	none	NA
Hold Time Absence (4)	0s	NA
OFF command (5)	Off	NA
OnCMD threshold	none	NA
Bright Out threshold	none	NA
Power Up behaviour	No action	NA
Constant light control (CLC)	inactive	NA
Front-LED (motion indication)	active	active
Instance 0 - motion event messages	inactive	active
Instance 1 – light intensity event messages	inactive	active

Instance Default Settings

To use the motion sensor instance or light sensor instance in combination with a DALI-2 CS or DALI-2 LS Master the following instance settings are needed, these are set as delivery default, only event messages need to be enabled this is done by the DALI-2 CS Master automatically (it is also possible to enable event messages manually without the DALI Cockpit via the DALI command ENABLE INSTANCE):

Instance Nr 0 – Motion:

Event messages	active
Event Schema	device addressing
Event Filter	Occupied Vacant
Deat time	0.00 sec
Report time	not applicable
Hold time	1 sec

Instance Nr 1 – light:

Event messages	active
Event Schema	device addressing
Event Filter	illuminance level
Deat time	0.8 sec
Report time	unused
Hysteresis Min	5 Lux
Hysteresis	5 %



Installation

- ☒ the DALI-2 CS is directly connected and supplied by the DALI bus. A DALI bus power supply is required.
- ☒ The connection to the DALI terminals can be made regardless of polarity.
- ☒ The terminals are suitable for wire cross-sections ranging from 0.5 mm² to 1.5 mm².
- ☒ back box mounting: installation of the mounting ring directly on the back box. The housing is then simply plugged onto to the mounting ring. The recessed head has sufficient space within the electrical installation box, enabling a flat installation.
- ☒ For mounting the sensor on cavity walls or suspended ceilings a version including additional fixtures with spring-clips is available: article number extension "-ZD".
- ☒ Version for surface mounting is available: article number extension "-AP".
- ☒ The CS Module enables alignment to the desired detection area through 360 ° axial rotation and vertical inclination of up to 40 °.
- ☒ The wiring should be carried out as a permanent installation in a dry and clean environment.
- ☒ Installation may only be carried out in a voltage-free state of the system and by qualified specialists.
- ☒ National regulations for setting up electrical systems must be followed.
- ☒ The DALI wiring can be realized with standard low-voltage installation material. No special cables are required.

- ☒ Only 1 wire may be connected to each terminal. When using double wire end ferrules, the connection capacity of the terminal must be considered.



Attention: The DALI-signal is not classified as SELV circuit (Safety Extra Low Voltage). Therefore, the installation regulations for low voltage apply.



Note: The cross section: the voltage drop on the DALI line must not exceed 2V at maximum length (300m) and maximum bus load (250mA).

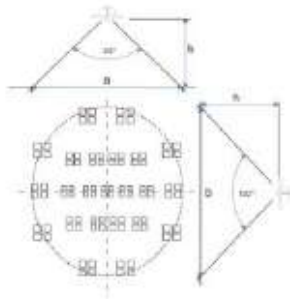


Presence Detection

For movement detection a temperature difference between the moving object and environment of at least 4°C is required. Heat sources such as copiers or heaters may have a negative influence on motion detection.

Presence Detection (Standard)

The applied PIR method allows coverage of relatively large areas using only one sensor head. With opening angles of 92° and 102° and a sensor mounted at a height of 5 meters the 92 detection zones cover an area of more than 100m². The distance between sensor and the object of interest should be less than 12 meters, which limits the mounting height to about 8m. See Figure 1 on page 5.



h [m]	a [m]	b [m]	A [m ²]
2,50	5,2	6,2	25,1
2,7	5,6	6,7	29,3
3,0	6,2	7,4	36,2
3,5	7,2	8,6	49,2
4,0	8,3	9,9	64,3
5,0	10,4	12,3	100,4
6,0	12,4	14,8	144,6
8,0	16,6	19,8	257,1

Table 1 relation of mounting height and detection area

Presence Detection CS-15

The sensor type „-15“ is suitable for high rooms (e.g. halls) with mounting height up to 12m. The detection range is about 15m. See Figure 2 page 6

h [m]	a [m]	b [m]	A [m ²]
-------	-------	-------	---------------------

5,0	6,9	6,9	37,1
7,5	10,3	10,3	83,5
10,0	13,7	13,7	148,4
12,0	16,5	16,5	213,7

Table 2 relation of mounting height and detection area

Presence Detection CS-O

Suitable for office application where detection of slight motion is required e.g. detection of arm movement of a sitting person. The DALI CS-O is tailored to this application and has a sensitive “inner area” and a standard detection “outer area”. The maximum mounting height is about 3m.

See Figure 3 page 6

The rectangular central zone is optimized for detection of the slightest motion. The area has an opening angle of 44° x 44° and 36 detection zones. With a mounting height of e.g. 2.2m, an area of 3.24 m² can be covered. (see table 3).

The outer standard motion detection zone has an opening angle of 90° x 90° and 48 detection zones. With a mounting height of e.g. 2.2m, an area of 15.2m² can be covered. (see Table 3).



The recommended mounting height is 3m.

The distance between the sensor and the object to detect should not be greater than 3.1m.

h [m]	Standard Detektionsbereich			Slight Motion Detektionsbereich	
	a [m]	b [m]	A1 [m ²]	l [m]	A2 [m ²]
2,0	4	4	12,5	1,6	2,56
2,2	4,4	4,4	15,2	1,8	3,24
2,5	5	5	19,6	2	4
3,0	6	6	28,2	2,4	5,76

Table 3 relation of mounting height and detection area

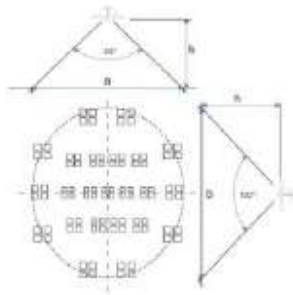


Presence Detection

For movement detection a temperature difference between the moving object and environment of at least 4°C is required. Heat sources such as copiers or heaters may have a negative influence on motion detection.

Presence Detection (Standard)

The applied PIR method allows coverage of relatively large areas using only one sensor head. With opening angles of 92° and 102° and a sensor mounted at a height of 5 meters the 92 detection zones cover an area of more than 100m². The distance between sensor and the object of interest should be less than 12 meters, which limits the mounting height to about 8m. See Figure 1 on page 5.



h [m]	a [m]	b [m]	A [m ²]
2,50	5,2	6,2	25,1
2,7	5,6	6,7	29,3
3,0	6,2	7,4	36,2
3,5	7,2	8,6	49,2
4,0	8,3	9,9	64,3
5,0	10,4	12,3	100,4
6,0	12,4	14,8	144,6
8,0	16,6	19,8	257,1

Table 1 relation of mounting height and detection area

Presence Detection CS-15

The sensor type „-15“ is suitable for high rooms (e.g. halls) with mounting height up to 12m. The detection range is about 15m. See Figure 2 page 6

h [m]	a [m]	b [m]	A [m ²]
-------	-------	-------	---------------------

5,0	6,9	6,9	37,1
7,5	10,3	10,3	83,5
10,0	13,7	13,7	148,4
12,0	16,5	16,5	213,7

Table 2 relation of mounting height and detection area

Presence Detection CS-O

Suitable for office application where detection of slight motion is required e.g. detection of arm movement of a sitting person. The DALI CS-O is tailored to this application and has a sensitive “inner area” and a standard detection “outer area”. The maximum mounting height is about 3m.

See Figure 3 page 6

The rectangular central zone is optimized for detection of the slightest motion. The area has an opening angle of 44° x 44° and 36 detection zones. With a mounting height of e.g. 2.2m, an area of 3.24 m² can be covered (see table 3).

The outer standard motion detection zone has an opening angle of 90° x 90° and 48 detection zones. With a mounting height of e.g. 2.2m, an area of 15.2m² can be covered (see Table 3).



The recommended mounting height is 3m. The distance between the sensor and the object to detect should not be greater than 3.1m.

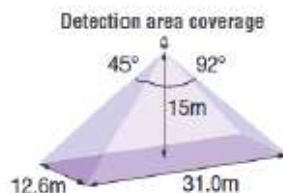
h [m]	Standard Detektionsbereich			Slight Motion Detektionsbereich	
	a [m]	b [m]	A1 [m ²]	l [m]	A2 [m ²]
2,0	4	4	12,5	1,6	2,56
2,2	4,4	4,4	15,2	1,8	3,24
2,5	5	5	19,6	2	4
3,0	6	6	28,2	2,4	5,76

Table 3 relation of mounting height and detection area



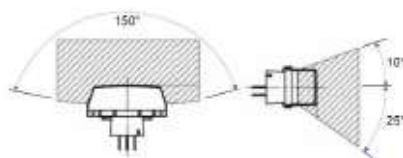
Presence Detection CS-30

The type -30 has an ultra wide and long distance detection type and is suitable for application in high bay aisles. The maximum mounting height is about 15m. For this installation height of 15m it gains a field of view of approx. 30m x 12m, with 188 detection zones which minimize blind spots, see also Figure 4 page 7.



Presence Detection CS-C

The DALI-2 CS Corridor has a "hammerhead lens" with a detection range of up to 5m and an asymmetrical alignment. The horizontal detection angle is up to 150°, while the vertical is asymmetrical (+ 10°, -25°). The lens is particularly recommended for wall mounting e.g. in corridors. See also Figure 5 page 7.



Cycle of Motion Detection

The motion detection is always processed according to the following sequence:

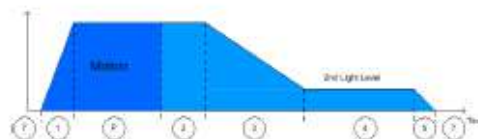


Figure. 6 motion/presence detection sequence

States:

- 1: Fade In Time – dim to 1st light level
- 2: Hold Time (On-State)
- 3: Fade Time – dim to 2nd light level
- 4: 2nd Hold Time (2nd Light Level)
- 5: Fade Out Time – dim to off

P: Presence detected - retrigger

7: Off

If motion is detected the sensor switches to the configured light level. While presence is detected (P) or the hold time is running (2) the light level stays on – either on a fix light level or controlled by a constant light control algorithm.

After the hold time, if not further motion was detected, the sensor changes the light level to the 2nd light level for a defined time (4). This 2nd light level is a user defined value (no constant light control). If motion is detected in this state, the sensor switches to the previous states (1, P). In case no further motion is detected the Off command (7) is sent

HINT: set the "absence level" to a low value, otherwise it could be higher than the light level set by the constant light control.

Steps Nr 1, 3 and 5 control the change between the states: 7/P/2/4/7. Depending on the DALI-commands for each state, the fade time can be used to allow smooth changes.



Light Sensor

Light measurement

All DALI-2 CS versions also include a light sensor. The light sensor measures the reflected illuminance in a range from 0 to 2047 lux. The resolution is 2 lux.

The incident light is rated by the spectral sensitivity of the human eye and thus comparable to the subjective visual perception of brightness.

The incident light is accumulated over the area covered by the lens and can be interpreted as average value in the detection area. A reference to the reflecting surface below the sensor can be established with the help of a reference measurement and adjustable offset value.

Functionality

It is necessary to distinguish between application controller and DALI-2 instances.

The application controller gives direct DALI control commands that are immediately executed by the DALI drivers.

DALI-2 instances generate event messages that are interpreted and processed by higher-level control units with DALI connection (e.g. DALI-2 CS in Master Mode, WAGO, Beckhoff, LUNATONE DALI-2 KNX gateway). General information on the DALI-2 instance mode:

https://www.lunatone.com/wp-content/uploads/2021/10/DALI-2_Instance-Guide_EN_M0024.pdf

Configuration of instances is described in section: Instances on page 23.

The DALI-2 CS Art. Nr.: L-86458670: can be used as either an application controller: *Master Mode*, or in instance mode:

Slave Mode. For the application controller all operating modes and setting options described in the document are available.

The DALI CS Integration Art.Nr.L-86458670-INT: does not have an application controller and is always in instance mode. The configuration options are described in section *Instances*, on page 23.

Operating Modes

The DALI-2 CS module offers 4 different operating modes: motion control, motion control with constant light control, sole constant light control or light control via light thresholds.

External commands can also be used to influence the operating behaviour of the sensor (e.g. when operated via another control device). The reaction to external commands is explained in detail for each operating mode.

Operating Mode 1 – motion control

☑ Movement activates a fixed light level

If movement is detected the time sequence is activated with a user defined fixed light level in State 2 (see Figure. 6 "Motion detection: sequence" on page 11). The light level stays active until no more movement is detected and the hold time has elapsed. Then the light level will be switched to the 2nd user defined light level.

Additional threshold values can be defined, such that the motion control is only active above or below this defined threshold.

The operating behaviour can be influenced by external on / off / dimming and scene commands. The options for each command are described on page 19



Operating Mode 2 – motion control with constant light control

- ☒ Movement activates constant light control
- ☒ 2nd light level is user defined and constant

If movement is detected the time sequence is activated with constant light control in State 2 (see figure "Motion detection: sequence" on page 11). The constant light control stays active until no more movement is detected and the "Hold On Time" has expired. Then the light level will be switched to the 2nd light value, which is a fixed user defined value.

Additional threshold values can be defined: such that the motion and light control is only active above or below this defined threshold.

The operating behaviour can be influenced by external on / off / dimming and scene commands. The options for each command are described on page 19

Operating Mode 3 – constant light control

- ☒ Constant light Control
- ☒ No motion detection

In this operating mode, only the light sensor is used; motion detection is inactive. The constant light control can be switched on and off with DALI commands (e.g. from a control device such as a DALI light switch).

The operating behaviour can be influenced by external on / off / dimming and scene commands. The options for each command are described on page 22.

Operating Mode 4 – light threshold control

- ☒ Light control via light thresholds
- ☒ No motion detection

Only the light sensor is used in this operating mode. Both motion detection and constant light control are inactive. 4 light thresholds

can be defined which trigger a DALI command on either falling below or exceeding the threshold. 2 of the 4 thresholds can be used to send commands repeatedly. The commands are sent at a user-defined interval until the threshold condition is no longer met.

The operating behaviour can be influenced by external scene commands. The options are described on page 23.

Additional Functionality

Response to external DALI commands

The behaviour of the control in the event of external commands (e.g. by a switch) can be configured with the DALI cockpit. Depending on the operating mode, different behaviours are possible. The options are described later in the document.

The following commands sent to the same destination address (1st address) are interpreted as an ON command:

RECALL MAX
RECALL MIN
ON AND STEP UP
DAP>0%
GOTO SCENE X (if the command was configured to be interpreted as an ON command for the CS)

The following commands sent to the same destination address are interpreted as an OFF command:

OFF
DAP=0
GOTO SCENE X (if configured to be interpreted as an OFF command for the CS)

Dimming commands: In addition, it can be specified how the motion control or light control should behave when manual dimming commands (UP/DOWN) to the target address



(1. Destination address) occurs.

On and Bright Out threshold

The motion sensor function can be adapted to the ambient light behaviour with the help of the On- and Off-Threshold.

ON Command threshold: The motion detection sequence can be started independent from the actual light level (default) or if the light level is above or below the OnCmd-threshold.

For a running motion sequence the presence detection – retriggering the sequence on motion - can either be set independent from the actual light level or only if the light level is below the Bright out threshold.

Bright out- Application example: Car Park lighting, that is set ON during the night (if measured light level < 70lux) but should not be kept ON during the day even though there might be constant detection of motion.

Power-On behaviour

It is possible to configure a start-up command to achieve a defined operating state after power on (return of the bus voltage). The start-up command can either be a DALI-command or a fast run of the motion detection sequence.

Multiple sensors in the same group

It is possible that several sensors have the same effective range, e.g. if several sensors are used to cover a large detection area. In the DALI Cockpit software (tab: "Synchronisation") the sensor addresses used for motion detection and sensor addresses used for light detection can be specified. Backward compatibility for older generation CS is made possible by the option "Backward compatibility with eDALI CS". Definition of the

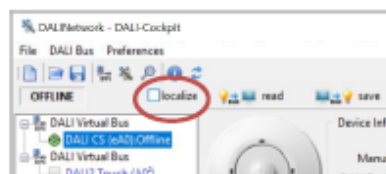
same effective range (target address 1) automatically synchronizes older generation sensors. The parameters of the sensors should be coordinated, especially the hold on times.

Configuration in the DALI Cockpit

The addressing and configuration of the DALI CS can be done easily with the help of the [DALI Cockpit](#) software tool and a suitable interface module ([DALI-2 USB](#), [DALI USB](#), [DALI-2 WLAN](#), [DALI-2 Display](#), [DALI-2 IoT](#), [DALI 4Net](#), [DALI SCI RS232](#)).

After an address has been assigned the parameters can be configured to fit the application.

The spatial allocation of each sensor can be done by selection of the "localize" check box in the DALI Cockpit. This will lead to flashing of the red LED of the currently selected sensor.



Configuration of the sensor is possible with the settings of the different tabs, explained in detailed on the following pages.

Tab: "General" – Sensor mode, Operating Mode:

Selection of the fundamental configuration is made on the "General" tab, see Figure. 7. The sensor can be set to Master or Slave Mode.

In *Master-Mode*, the DALI-2 CS takes over control according to the subsequently selected operating mode. The DALI-2 CS *Master* is an application controller and gives direct DALI control commands that are immediately executed by the DALI gears.



(1. Destination address) occurs.

On and Bright Out threshold

The motion sensor function can be adapted to the ambient light behaviour with the help of the On- and Off-Threshold.

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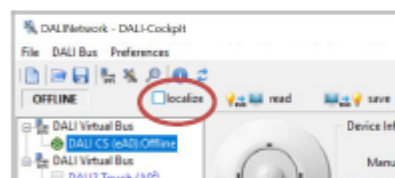
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In *Master-Mode*, the DALI-2 CS takes over control according to the subsequently selected operating mode. The DALI-2 CS *Master* is an application controller and gives direct DALI control commands that are immediately executed by the DALI gears.



General	Instances	Effective Range	Synchronization	Motion Control
destination address 0: none 1: none 2: none 3: none				
external control addresses 0: none 1: none 2: none 3: none				
Behavior in case of external commands external ON Commands: no influence on sensor behavior external OFF commands: no influence on sensor behavior external Dimming: no influence on sensor behavior				
Power Up <input checked="" type="radio"/> no action <input type="radio"/> Send command <input type="radio"/> Simulate Movement – Sequence (15s, 15s)				

Effective Range: the CS can send commands to up to four destination addresses at the same time (devices, groups or broadcast). This setting is used in every operating mode

The external control addresses determine which addresses are monitored by the CS. The behaviour of the CS in the case of external commands (e.g. from a light switch) to these addresses can be defined

The behaviour in case of an external on / off and dimming commands (e.g. from a light switch) can be defined. Different options are available depending on the operating mode - see page 19 and page 22.

defines how the CS behaves during power up: no action, sending a defined command or in operating mode with motion detection: triggering a motion sequence

Figure. 8 Tab: "Effective Range" – destination address and external control address

Tab: "Synchronization" – sensor input and Slaves

See Figure. 9. To include other sensor measurements into the evaluation, additional DALI-2 CS can be selected as sensor inputs. The selected DALI-2 CS are automatically set to slave mode by the currently configured DALI-2 CS (Master). Depending on the operating mode, different sensors input for each sensor-functionality can be defined:

for "Motion detection":
 input for movement,

input for light thresholds
 for "Motion detection with constant light control":

input for movement,
 input for light thresholds,
 input for constant light control

for "Constant light control":
 input for constant light control
 for "Light control":
 input for light thresholds.



General | Instances | Effective Range | Synchronization | Motion Control

motion control – slave sensor input – selection by address

<input checked="" type="checkbox"/> 0		<input type="checkbox"/> 4
<input type="checkbox"/> 1		<input type="checkbox"/> 5
<input type="checkbox"/> 2		<input type="checkbox"/> 6
<input type="checkbox"/> 3		<input type="checkbox"/> 7

constant light control – slave sensor input – selection by address

<input checked="" type="checkbox"/> 0		<input type="checkbox"/> 4
<input type="checkbox"/> 1		<input type="checkbox"/> 5
<input type="checkbox"/> 2		<input type="checkbox"/> 6
<input type="checkbox"/> 3		<input type="checkbox"/> 7

Sensor Evaluation Mode: **Average**

light control – slave sensor input – selection by address

<input checked="" type="checkbox"/> 0		<input type="checkbox"/> 4
<input type="checkbox"/> 1		<input type="checkbox"/> 5
<input type="checkbox"/> 2		<input type="checkbox"/> 6
<input type="checkbox"/> 3		<input type="checkbox"/> 7

Sensor Evaluation Mode: **Average**

Light sensor calibration...

Light sensor calibration

☒ Current Light Level: 183 Lux

light value offset: 0 Lux

Set Cancel

Callout 1: These DALI addresses define which other sensors are evaluated for motion detection. In order to detect movement in the room, movement detectors that support instance type 3 (303) are required. Up to 8 inputs can be defined. Nr. 0 is always the current CS itself (*Master*), all other input sensors are set to *Slave Mode*.

Callout 2: These DALI addresses define which of the sensors are evaluated for constant light control. In order to measure the brightness in the room, sensors are required that support instance type 4 (304). Up to 8 inputs can be defined. Nr. 0 is always the current CS itself (*Master*), all other input sensors are set to *Slave Mode*.

Callout 3: These DALI addresses define which other sensors are involved in lighting control. In order to measure the brightness in the room, sensors are required that support instance type 4 (304). Up to 8 inputs can be defined. Nr. 0 is always the current CS itself (*Master*), all other input sensors are set to *Slave Mode*.

Callout 4: With the "Sensor Evaluation Mode" it can be defined, whether a maximum, minimum or mean value of the various sensor values is used for the evaluation.

Callout 5: via the "light sensor calibration", the currently measured light value can be read out and if necessary, adjusted with an offset value.

Figure. 9 Tab: "Synchronization" – sensor inputs for measurement evaluation

Tab: "Motion Control"

See Figure. 10, in this tab, the times and light levels of the motion detection sequence, that is triggered by movement, can be defined. As

well as the light thresholds to activate the motion detection depending on the lighting conditions. (operating mode description see page 12 and page 13)

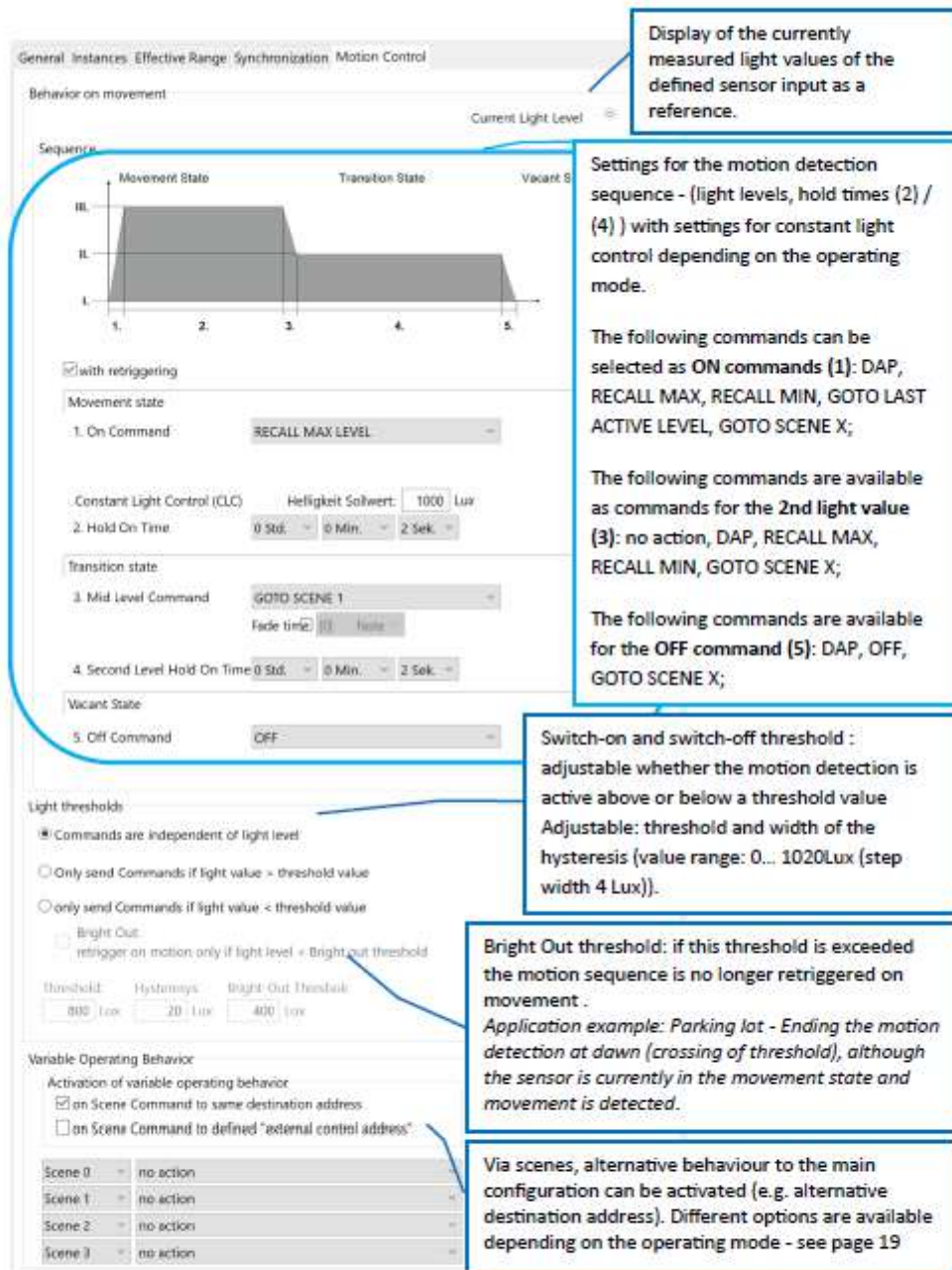


Figure. 10 Tab: „motion detection control“



Motion Control - Behaviour with external commands

The operating behaviour can be influenced by external commands (e.g. from a DALI-switch).

In the Cockpit tab "Effective range", the behaviour of the sensor on ON- / OFF- and dimming commands, sent to the 4 configurable "external control addresses", can be defined.

Additionally, the operating behaviour of the sensor can be changed with scene commands, via the tab "Motion detection" -section: Variable Operating Behaviour.

The following settings are available:

Operating mode 1 – motion detection

An external ON command	
No influence: the ON command is ignored by the CS. The CS continues to carry out the control as configured	
External control: motion control is deactivated (The CS does not send any DALI commands), until manually reactivated by an external OFF command.	
Simulate movement: start the Motion Detection Sequence (Figure. 6, page 11)	
An external OFF command	
No influence: the OFF command is ignored by the CS. The CS continues to carry out the control as configured	
Waiting for motion: change to State 5 and then to OFF state (state 7, Figure. 6), motion detection active - waiting for motion	
Disable sensor control: change to state 5 and then to OFF state (state 7, Figure. 6), the motion detection is deactivated until reactivated by an ON command.	

an external DIMMING command:	
No influence: the DIMMING command is ignored by the CS. The CS continues to carry out the control as configured	
External control: motion control is deactivated (The CS does not send any DALI commands), until manually reactivated by an external OFF command.	
Change light level until end of sequence: the On command light level (State 2, Figure. 6) is changed by dimming. The new light level is retained for the current movement detection sequence	

Variable Operating Behaviour - An external SCENE command	
No action: the SCENE command is ignored by the CS.	
Reset to Default: The CS is set to the basic configuration, all previously forced changes to the operating behaviour are terminated.	
Alternative destinations: An alternative destination address (user defined) is used instead of the configured standard destination.	
Alternative ON Command Light Level DAP: Instead of the currently configured DALI command, a user defined DAP value is used in state 2 (Motion Detection Sequence Figure. 6).	
Alternative ON Command SCENE: Instead of the currently configured DALI command, a user defined Scene is used in state 2 (Motion Detection Sequence Figure. 6).	
Waiting for motion: go to State 5 and then to OFF state (state 7, Figure. 6), motion detection active - waiting for motion	

Operating Mode 2 – motion detection with constant light control

An external ON command	
No Influence: the ON command is ignored by the CS. The CS continues to carry out the control as configured	



<p>External control: Constant light control and motion control are deactivated (The CS does not send any DALI commands). until they are reactivated by an external OFF command.</p>	<p>(State 2). Automatic reactivation of constant light control after end of sequence</p>
<p>Simulate movement: start the Motion Detection Sequence (Figure. 6, page 11)</p>	<p>Change constant light control reference light level until end of sequence: the reference light level for constant light control is changed by dimming. If no dimming process is detected for 2 seconds, the current light value is adopted as the new setpoint for the constant light control. The new setpoint is only retained for the current movement detection sequence (as long as movement is detected).</p>
<p>Simulate movement without constant light control: Starts the motion detection sequence (State 1, Figure. 6) and deactivates the constant light control. The sent ON command is executed instead of constant light control. The constant light control is temporarily deactivated until the OFF-state (state 7, Figure. 6) is reached.</p>	<p>Change constant light control reference light level: the reference light level for constant light control is changed by dimming. If no dimming process is detected for 2 seconds, the current light value is adopted as the new setpoint for the constant light control.</p>
<p>Constant Light Control: The motion detection is deactivated and constant light control is permanently active until it is cancelled by an OFF command. (Standard behaviour is thereby reactivated)</p>	
<p>An external OFF command</p>	<p>Variable Operating Behaviour - An external SCENE command</p>
<p>No Influence: the OFF command is ignored by the CS. The CS continues to carry out the control as configured</p>	<p>No action: the SCENE command is ignored by the CS</p>
<p>Waiting for motion: Got to OFF state - go to State 5 and then to OFF state (state 7, Figure. 6), motion detection active - waiting for motion</p>	<p>Reset to defaults: The CS is set to the basic configuration, all previously forced changes to the operating behaviour are terminated.</p>
<p>Disable sensor control: change to state 5 and then to OFF state (state 7, Figure. 6) , the motion detection is deactivated until reactivated by an ON command. Enables: <i>„Off Only “: if the CS should only send an off command after a manual on (simulate movement) after the hold time has expired</i></p>	<p>Alternative destinations: An alternative destination address (user defined) is used instead of the configured standard destination.</p>
<p>an external DIMMING command:</p>	<p>Alternative ON Command Light Level DAP: Instead of the currently configured DALI command, a user defined DAP value is used in state 2 (Motion Detection Sequence Figure. 6).</p>
<p>no influence: the DIMMING command is ignored by the CS. The CS continues to carry out the control as configured</p>	<p>Alternative ON Command SCENE: Instead of the currently configured DALI command, a user defined Scene is used in state 2 (Motion Detection Sequence Figure. 6, page 11).</p>
<p>External control: Constant light control and motion control are deactivated (the CS does not send any DALI commands) until they are reactivated by an OFF command.</p>	<p>Alternative constant light control reference light level: Instead of the current reference value an alternative user defined light level is used</p>
<p>Disable constant light control until end of sequence: constant light control is deactivated temporarily during Motion Detection Sequence</p>	<p>Disable Constant Light Control until end of sequence: constant light control is deactivated temporarily during Motion Detection Sequence (State 2). Automatic reactivation of constant</p>



light control once no more movement is detected.

external control: Constant light control and motion control are deactivated. The CS does not send any DALI commands.

Waiting for motion: Got to OFF state - go to State 5 and then to OFF state (State 7, Figure. 6) motion detection active - waiting for motion

the Operating mode: "constant light control" was selected.

Operating mode: Light threshold control
See Figure. 11. If the Operating Mode: "Light-controlled" was selected the light sensor control functions as a threshold switch. A maximum of 4 thresholds can be defined. The defined DALI commands will be executed if the values are exceeded or fallen below of.

2 of the 4 available thresholds can also be used to send commands periodically. The commands are sent at a user-defined interval until the threshold condition is no longer met.

Tab: „Light Control“

Depending on the selected operating mode:

Operating mode: Constant light control

See Figure. 12. The tab "light control" contains the settings for constant light control (CLC) if

The screenshot shows the 'Light Control' tab with various settings. Annotations provide details about specific features:

- Current Light Level:** Display of the currently measured light values of the defined sensor input as a reference.
- Thresholds:** Predefine the two following two thresholds as hysteresis.
- Threshold Activation:** Activate / deactivate the respective threshold.
- Threshold Configuration:** Setting the threshold value, the DALI command and whether this should be carried out when the threshold is exceeded or fallen below of. (Threshold (0... 1020 lux, step size 4lux), hysteresis: is the difference between the two set thresholds (0 ... 255 lux))
- Repetition:** 2 of the 4 threshold values can be sent with repetition, by choosing the time between repetitions greater than zero. (With 0h, 0min, 0sec no repetition is carried out). The respective commands are sent with the selected interval until the set condition is no longer met. *Application example: closing blinds when the incidence of light is too strong.*
- Variable Operating Behavior:** Via scenes, alternative behaviour to the main configuration can be activated (e.g. alternative destination address). Different options are available depending on the operating mode - see page 23.

Figure. 11 Tab: „Light Control“ -Operating Mode: without constant light control

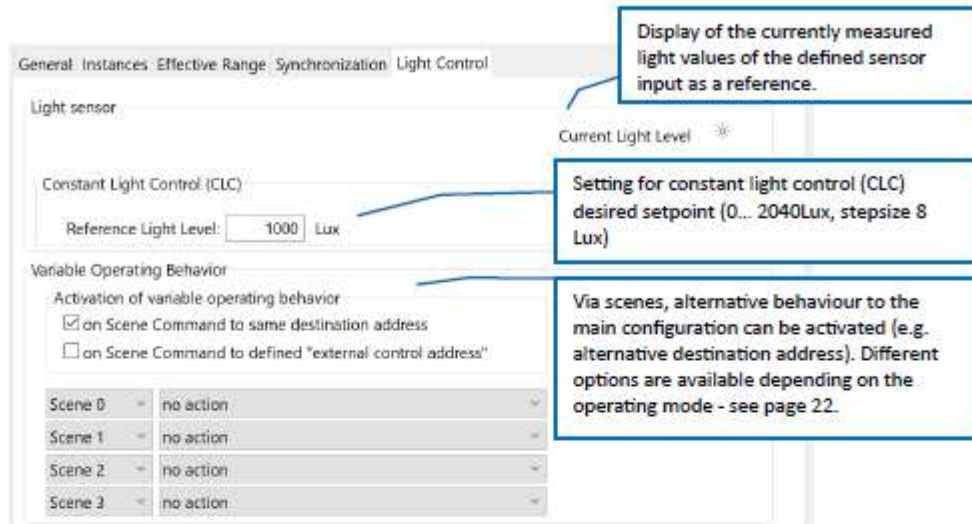


Figure. 12 Tab: „Light Control” – Operating Mode : with constant light control

Light Control - Behaviour with external commands

The operating behaviour can be influenced by external commands (e.g. from a DALI-switch).

In the Cockpit tab "Effective range", the behaviour of the sensor on ON- / OFF- and dimming commands, sent to the 4 configurable "external control addresses", can be defined.

Additionally, the operating behaviour of the sensor can be changed with scene commands, via the tab "Motion detection" -section: Variable Operating Behaviour.

The following settings are available:

Operating Mode 3 – constant light control

An external ON command
No influence: the ON command is ignored by the CS. The CS continues to carry out the control as configured
External control: the constant light control is deactivated. (the CS does not send any DALI

commands), until reactivated by an external OFF command.
Enable constant light control: The constant light control is activated.
An external OFF command
No influence: the OFF command is ignored by the CS. . The CS continues to carry out the control as configured
Disable constant light control: The constant light control is deactivated.
an external DIMMING command:
No influence: the DIMMING command is ignored by the CS. The CS continues to carry out the control as configured
Disable constant light control temporarily: constant light control is deactivated until the next OFF command.
Change constant light control reference light - temporary: the reference light level for constant light control is changed by dimming. If no further dimming process is detected for 2 seconds, the current light value is adopted as



the new setpoint for the constant light control. The new setpoint is only retained until the next OFF command.

Change constant light control reference light level -general: the reference light level for constant light control is changed by dimming. If no dimming process is detected for 2 seconds, the current light value is adopted as the new setpoint for the constant light control.

Variable Operating Behaviour - An external SCENE command

No action: the SCENE command is ignored by the CS

Reset to Default: The CS is set to the basic configuration, all previously forced changes to the operating behaviour are terminated.

Alternative destinations: An alternative destination address (user defined) is used instead of the configured standard destination.

Alternative constant light control reference light level: Instead of the current reference value an alternative user defined light level is used

Enable constant light control: The constant light control is activated.

External Control: The constant light control is deactivated (the CS does not send any DALI commands).

External control: the light threshold control is deactivated (the CS does not send any DALI commands).

Instances

The DALI-2 CS and DALI-2 CS Integration support 2 instances standardized according to DALI: motion detector instance (303) for motion detection and light sensor instance (304) for light measurement.

In *Slave mode*, the DALI-2 CS is automatically in instance mode. The factory settings are designed for use in conjunction with a DALI-2 CS *Master*.

- ☑ Instance Nr. 0: Type motion detector
- ☑ Instance Nr. 1: Type light sensor

Instances – General

Each instance can be configured individually. Some settings have the same functionality for all sensor instances and are therefore described in this section. Instance specific settings are explained for each individual instances in the following respective sections.

enable/disable

If instances are not required, they can be deactivated. In this case, event messages are not sent, and the measured values are not updated. They can, however, still be queried via a "Query" command, and the DALI-2 configuration commands and queries are still supported.

Event Scheme

The event scheme determines which information is transferred with the event. This information is required, to enable recognition and / filtering of events on the bus. The following 5 options are available:

- ☑ Instance addressing:
instance type and instance number

Operating Mode 4 – light threshold control

Variable Operating Behaviour - An external SCENE command

No action: the SCENE command is ignored by the CS

Reset to Defaults: The CS is set to the basic configuration, all previously forced changes to the operating behaviour are terminated.

Alternative Destinations: An alternative destination address (user defined) is used instead of the configured standard destination.



- ☒ Device Addressing:
device address and instance type
- ☒ Device/Instance Addressing:
device address and instance number
- ☒ Device Group Addressing:
Device group and instance type
- ☒ Instance Group Addressing:
Instance group and instance type

Instance group

Up to three instance groups can be assigned for each instance. Only the "Primary Group" is used for the event.

Instance type

The instance type defines which DALI-2 standard is valid for this instance. (The different instance types are specified in the DALI-2 standard.)

Instance number

Each instance in a device has a unique instance number.

Device group

The device can be assigned to up to 32 device groups (0...31). The lowest device group is used for the event.

Device address

A device address (or short address) (0..63) can be assigned to each device. With this the device can be clearly addressed. (Identical short addresses should be avoided.)

Event priority

The event priority determines the order in which events are sent when they occur simultaneously on the bus. Priority 2 = highest and 5 = lowest.

Dead Time

The dead time can be set for each instance. It determines the time that must pass before an event can be sent again. This also applies if the

event information (measured value) changes. If no dead time is required, it can be deactivated.

Report Time

If the event information does not change, the event is sent cyclically with the report time. The report time can be set for each instance. It determines the maximum time between a sent event and resending.

Hysteresis

Not every change in value leads to an event being generated. The hysteresis can be used to set which percentage change is necessary to trigger a new transmission. Attention, the hysteresis band is not arranged symmetrically. The following applies:

Increasing value

The condition for an event is only fulfilled if the next value falls below the previous value minus the hysteresis or if the next value is greater than the previous value.

Decreasing value

the condition for an event is only fulfilled if the next value exceeds the previous value plus the hysteresis or the next value is smaller than the previous value.

Hysteresis Min

Is the minimal hysteresis value that cannot be fallen below of.

Instance 0 – Motion

Is an instance standardized by DALI-2 (L-62386 303), for sensors that detect motion. All settings are implemented according to the standard. The instance is DALI-2 certified.

The sensor switches between the following states:

- People in the room and movement (0xFF)



- People in the room and no movement (0xAA)
- Empty room (0x00)

If the sensor detects movement, it immediately changes to the state: "people in the room and movement". This state is exited after 1 second at the earliest if no further movement is detected. In this case it changes to the state "People in the room and no movement". After the hold time has expired it changes to the state "Empty room"- Vacant.

Hold Time: Is the time that must pass before the state "people in the room and no movement" is changed to the state "empty room". If movement is detected during this time the state is changed back to: "People in the room and movement". (min. 1 second)

Query Input Value: The current sensor state can be queried using this DALI command. The following values are possible: 0x00, 0xAA, 0xFF (see paragraph above for the possible states)

Event: the sensor status is transmitted by events. The following event information is available:

- Bit0 = 0: No Movement
- Bit0 = 1: Movement
- Bit2/Bit1 = 00: Vacant
- Bit2/Bit1 = 10: Still Vacant
- Bit2/Bit1 = 01: Occupied
- Bit2/Bit1 = 11: Still Occupied
- Bit3 = 1: Movement Sensor
- Bit5..Bit9 = 0: unused

More details can be found in the standard 62386-303.

Event filter: The event filter defines for which status change an event is generated.

Filter arrangement:

- Bit0: Occupied Event active
- Bit1: Vacant Event active
- Bit2: Still Vacant/Occupied Event active
- Bit3: Movement Event active

- Bit4: No Movement Event active
- Bit5..Bit7: unused

Report Time: can only be set if the event filter "Repeat" is activated and the events: "Still Vacant" and "Still Occupied" are enabled. The time between sending a "Still-Event" again is determined by the Report Time.

Instance 1 – Light intensity

is an instance standardized by DALI-2(L-62386-304). All settings are implemented according to the standard. The instance is DALI-2 certified.

The current light value (lux) is measured by the sensor and can either be queried using a "Query" command or can be automatically provided by the sensor using an event.

The measuring range is 0Lux ... 2046Lux. The resolution differs between queries and generated events. A query supports a resolution of 1Lux (11Bit) and an event a resolution of 2Lux (10Bit).

Hysteresis: For information on the hysteresis see section Instances -General: *Hysteresis* page 24.

Hysteresis Min: set in lux. For general information on the hysteresis min see section Instances – General: *Hysteresis Min* page 24

Event Filter: The light instance generates only one event with 10-bit resolution (0... 2047 lux, step size 2lux). If the filter is deactivated, no events will be sent.



Cockpit - Instances

The settings for the instances can be made in the Cockpit – tab “Instances”.

Example for settings of instance 0 – motion see Figure. 13. Example for settings of instance 1 – light intensity see Figure. 14

General Instances

Instance Number (iN): 0

Instance 0 settings

☐ Enable Event Messages

Instance type (iT): 3 - Occupancy sensor

Primary Instance Group (iG): None

Instance Group 1 (iG): None

Instance Group 2 (iG): None

Event scheme: Device addressing

Event priority: Priority 4

Event Filters:

- ☒ Occupied
- ☒ Vacant
- ☐ Still Occupied/Vacant
- ☐ Movement
- ☐ No movement

Timers:

Deadtime: [Slider]

Report: [Slider] 0 s

Hold: [Slider] 1 s

Selection of the instance for configuration:
Instance 0: Motion
Instance 1: Light intensity

activate event messages for this instance

Description of the instance type

Associated instance groups

Events and timer settings for the selected instance 0 - motion

Figure. 13 tab: „Instances” – motion detector instance

General Instances

Instance Number (iN): 1

Instance 1 settings

☐ Enable Event Messages

Instance type (iT): 4 - Light sensor

Primary Instance Group (iG): None

Instance Group 1 (iG): None

Instance Group 2 (iG): None

Event scheme: Device addressing

Event priority: Priority 4

Event Filters:

- ☒ Illuminance level

Timers:

Deadtime: [Slider]

Report: [Slider] un

Hysteresis Band: [Slider]

Hysteresis Min: [Slider] 5 Lux

Hysteresis: [Slider] 5 %

Light sensor calibration...

Selection of the instance for configuration:
Instance 0: Motion
Instance 1: Light intensity

activate event messages for this instance

Description of the instance type

Associated instance groups

Events and timer settings for the selected instance 1 - light intensity

Enables light sensor calibration via an offset value

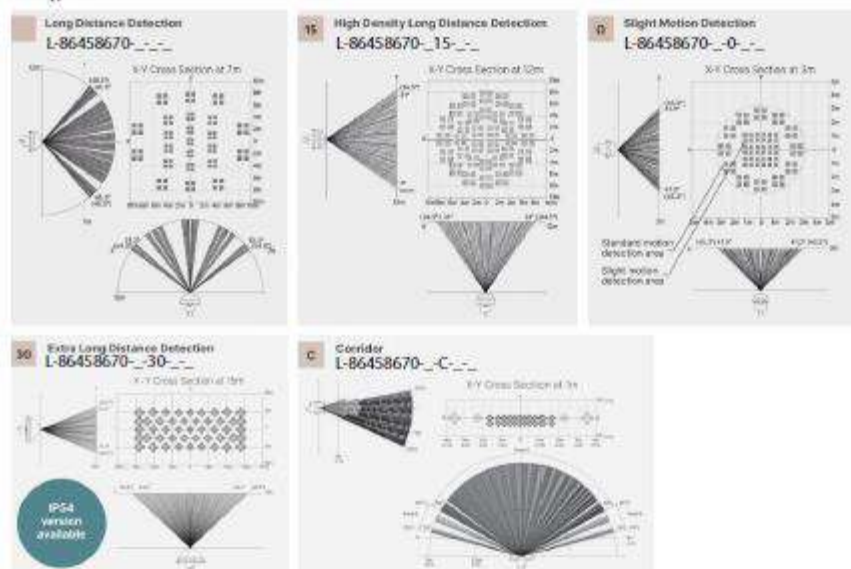
Figure. 14 tab: “instances” – light sensor instance



Purchase Order Information

ARTICLE BASIS	DALI-2 FUNCTION	SENSOR, detection range & mounting height	COLOR	INSTALLATION TYPE
L-86458670	Application Controller and DALI-2 instances INT only DALI-2 instances	standard, 12m & 8m TS: especially for high points, 15m & 18m O: detection of minor movements, 2.3m / 3m & 3m 30: especially for high way, 30m x 12m C: corridor lens	RAL 9010 W16: RAL 9010 B: Black	for flush-mounted installation boxes ZD: suspended ceiling type with clear surface mounting type AP: surface mounting type

Lens types:



Housing colour:



Installation type:





Standard Version

L-86458670: DALI-2 CS, sensor module (motion/ light), Application Controller and Instance mode, pure white (RAL9010), back box installation

- L-86458670-AP pure white (RAL9010), surface mounting
- L-86458670-ZD pure white (RAL9010), suspended ceiling (spring)
- L-86458670-W16 traffic white (RAL9016), back box installation
- L-86458670-W16-AP traffic white (RAL9016), surface mounting
- L-86458670-W16-ZD traffic white (RAL9016), suspended ceiling (spring)
- L-86458670-B black, back box installation
- L-86458670-B-AP black, surface mounting
- L-86458670-B-ZD: black, suspended ceiling (spring)

Hall Version – for halls / high ceilings: presence detection range 15m

L-86458670-15: DALI-2 CS, sensor module (motion/ light), presence detection range 15m, Application Controller and Instance mode, pure white (RAL9010), back box installation

- L-86458670-15-AP pure white (RAL9010), surface mounting
- L-86458670-15-ZD pure white (RAL9010), suspended ceiling (spring)
- L-86458670-15-W16 traffic white (RAL9016), back box installation
- L-86458670-15-W16-AP traffic white (RAL9016), surface mounting
- L-86458670-15-W16-ZD: traffic white (RAL9016), suspended ceiling (spring)
- L-86458670-15-B black, back box installation
- L-86458670-15-B-AP black, surface mounting
- L-86458670-15-B-ZD: black, suspended ceiling (spring)

Office Version - for office applications: detection of small movement / seated people

L-86458670-O: DALI-2 CS, sensor module (motion/ light), for office applications (detection of arm movement of seated persons), Application Controller and Instance mode, pure white (RAL9010), back box installation

- L-86458670-O-AP pure white (RAL9010), surface mounting
- L-86458670-O-ZD pure white (RAL9010), suspended ceiling (spring)
- L-86458670-O-W16 traffic white (RAL9016), back box installation
- L-86458670-O-W16-AP traffic white (RAL9016), surface mounting
- L-86458670-O-W16-ZD traffic white (RAL9016), suspended ceiling (spring)
- L-86458670-O-B black, back box installation
- L-86458670-O-B-AP black, surface mounting
- L-86458670-O-B-ZD black, suspended ceiling (spring)

Long Distance Version - for high bay applications

L-86458670-30: DALI-2 CS, sensor module (motion/ light), for high bay applications, Application Controller and Instance mode, pure white (RAL9010), back box installation

- L-86458670-30-AP pure white (RAL9010), surface mounting
- L-86458670-30-AP-IP54 pure white (RAL9010), surface mounting, IP54
- L-86458670-30-ZD pure white (RAL9010), suspended ceiling (spring)
- L-86458670-30-ZD-IP54 pure white (RAL9010), suspended ceiling (spring), IP54



L-86458670-30-W16 traffic white (RAL9016), back box installation
L-86458670-30-W16-IP54 traffic white (RAL9016), back box installation, IP54
L-86458670-30-W16-AP traffic white (RAL9016), surface mounting
L-86458670-30-W16-AP-IP54 traffic white (RAL9016), surface mounting, IP54
L-86458670-30-W16-ZD traffic white (RAL9016), suspended ceiling (spring)
L-86458670-30-W16-ZD-IP54 traffic white (RAL9016), suspended ceiling (spring), IP54
L-86458670-30-B black, back box installation
L-86458670-30-B-IP54 black, back box installation, IP54
L-86458670-30-B-AP black, surface mounting
L-86458670-30-B-AP-IP54 black, surface mounting, IP54
L-86458670-30-B-ZD black, suspended ceiling (spring)
L-86458670-30-B-ZD black, suspended ceiling (spring), IP54

Corridor Version – for corridors

L-86458670-C: DALI-2 CS, sensor module (motion/ light), corridor applications, Application
Controller and Instance mode, pure white (RAL9010), back box installation
L-86458670-C-AP pure white (RAL9010), surface mounting
L-86458670-C-ZD pure white (RAL9010), suspended ceiling (spring)
L-86458670-C-W16 traffic white (RAL9016), back box installation
L-86458670-C-W16-AP traffic white (RAL9016), surface mounting
L-86458670-C-W16-ZD traffic white (RAL9016), suspended ceiling (spring)
L-86458670-C-B black, back box installation
L-86458670-C-B-AP black, surface mounting
L-86458670-C-B-ZD black, suspended ceiling (spring)

Version DALI-2 CS Integration Art. L-86458670 -INT – Motion and Light
<https://www.lunatone.com/en/product/dali-2-cs-integration/>

Version DALI-2 CS Integration THP Art. L-86457786 -INT – Motion, Light, temperature, humidity, air
pressure
<https://www.lunatone.com/en/product/dali-2-cs-integration-thp/>

Version DALI-2 CS Integration THP Art. L-86457786 -INT-AQ – Motion, Light, temperature,
humidity, air pressure, air quality
<https://www.lunatone.com/en/product/dali-2-cs-integration-thp-aq/>



PS 24V

Datasheet

Power Supply

24V DC Power Supply

L-24166012-24HS





PS 24V Power Supply

Overview

- 24V DC Power Supply
- maximum output current of 300mA
- suitable for din rail mounting (1TE)
- Status LED

Specification, Characteristics

type	PS 24V
article number	L-24166012-24HS
electrical data:	
input voltage	230VAC
maximum input current	50mA
output voltage	24V DC
maximum output current	300mA
technical data:	
storage and transportation temperature	-20°C ... +75°C
operational ambient temperature	-20°C ... +60°C
protection class	IP20
maximum connecting wire crosssection	2,5 mm ²
mounting	dinrail
dimensions	98 x 17,5 x 56 mm

