

Nødtelefon i vegtunnel

Nødtelefon 

...rør og vent på svar.
...en svarer innen ett
...legg på røret
...igjen.

...e receiver and wait for
...swer. If no one answers
...n the first minute,
...g up and try again.



Grønn blink: OK
Grønt lys: Samtale
Slukket lys: Feil

...örer abnehmen und Antwort
...abwarten. Falls Innerhalb
...einer minute keine Antwort
...kommt, hörner auflegen und
...erneut versuchen.

...vous n'avez pas de
...réponse au bout d'une
...minute, respozes le com
...et répétèz l'operation.

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Vi har med dette gleden av å presentere 2019 utgaven av «Nødtelefon i vegtunnel». Dere vil finne både kjent stoff og nyutviklede løsninger og til sammen representerer dette Norges bredeste utvalg av nødtelefoner, nettverk og kabling.

Vårt engasjement i norske vegtunneler strekker seg tilbake til tidlig på 90-tallet da vi startet i Bailey Petrovest med å levere TuFTel 2495 analoge nødtelefoner tilpasset kravene fra Statens vegvesen. TuFTel analog og IP er installert i tunneler over hele Norge og mange av de første er fremdeles i drift.

Vi leverte vårt første IP baserte nødtelefonsystem i 2007 og i dag har vi levert nærmere 4000 telefoner og over 150 sentraler til tunneler over hele Norge.

I sammenheng med utfasing av ISDN så er vi begynt å levere sentraler og analogadaptere til eksisterende analoge telefonanlegg. Våre «gamle» Lancom ISDN sentraler er forberedt for VoIP slik at oppgradering av disse anleggene til VoIP er en enkel sak.

Vi leverer en komplett pakke, ferdig programmert og testet. I dette ligger ofte ansvaret for å koordinere oppkobling mot Vegtrafikksentral.

Erfaringene fra disse har gitt oss en unik kompetanse i en krevende teknologi. Vi ser fram til å benytte dette i videre utvikling av produkter og løsninger fra Catena i et meget spennende marked.



RV43 Aunevik – Bukkestein
 Fv457 Flekkerøytunnelen
 RV44 Klepp
 E18 Kopstad – Gulli
 Tønsbergpakken
 E10 Sørøsttunnelen
 E10 Fjøsadalstunnelen
 RV653 Eiksundtunnelen
 E6 Eidet tunnelen
 E18 Kleivene tunnelen
 E16 Wøyen - Bjørum
 RV658 Ellingsøy - Valderøy
 Rv38 Eklund – Sannidal
 OPS E18 Kristiansand – Grimstad
 E6 Nøstvedt Tunnelen
 RV519 Finnøytunnelen
 RV17 Vethaugen Tunnel
 E18 Operatunnelen
 RV70 Freifjordtunnelen
 RV64 Tussentunnelen
 FV500 Lysebotn tunnel
 FV117 Ørødalen tunnel
 Marienborgtunnelen
 E18 Krosby-Knapstad
 RV108 Bjølstadstunnelen
 RV80 Røvika-Strømsnes
 E6 Alta Vest
 E6 Øyer – Tretten
 Fv45 Rørdalen
 Fv45 Giljajuvet
 Fv117 Fureli tunneler
 Fv 37 Tinnsjøtunnelene
 Rv 94 Skjålholmen
 E6 Eidsvolltunnelen
 E39 Kvivstunnelen
 Rv108 Hvalertunnelen
 Rv108 Kråkerøytunnelen
 E6 Talviktunnelen
 Solasplitten
 Løkkenåstunnelen
 Rv23 Oslofjordtunnelen
 E39 Noreviktunnelen
 E134 Austmannaliatunnelen
 Strindheimtunnelen
 Rv13 Osbergstunnelen
 E10 Lofast II
 Ulven – Sinsen
 Rv868 Pollfjelltunnelen
 Dalsfjordforbindelsen
 E10 Hamnøytunnelen
 Fv714 Lakseveien
 Fv41 Leiratunnelen
 E39 Hjartåbergstunnelen
 Rv456 Vågsbygdporten
 Rv76 Molvikhammartunnelen
 E16 Nestunnelen
 Rv13 Vatne – Skreppeneset
 E16 Wøyen - Bjørum
 E39 Harangen – Halsteinbrua
 E12 Umskardtunnelen
 Fv53 Midnestunnelen
 Fv78 Tøventunnelen
 Fv78 Bergsnevtunnelen
 E134 Fjæra, Langfoss og Glymjatunnelene
 E16 Stavenestunnelen
 Fv33 Skreifjella - Totenvika
 Rv7 Sokna - Ørgenvika
 E16 Fønhus - Bagn
 E39 Austad, Drageid, Loga tunnelene
 Rv354 Høgenheitunnelen
 Fv283 Bragernestunnelen
 Fv17 Hestnestunnelen
 E39 Hordviktunnelen
 E6 Espatunnelen
 E6 Morskogtunnelen
 E6 Korslundtunnelen
 Rv70 Oppdølstranda
 E39 Eikåstunnelen
 E6 Kråkmotunnelen
 Fv42 Gyadalen
 Fv17 Svartistunnelen
 E19 Leirvik og Treldal tunnelene
 E134 Svandalsflonattunnelen
 E6 Grillstadstunnelen



Duetto VoIP PoE Innfelt G4

Tilkobling av nettverk og I/O

Display på baksiden og **LED statuslampe** i front gir verdifull informasjon under bruk, installasjon, drift og vedlikehold:

Display på bakside:

Dag/dato/tid/IP-adresse

DHCP/Static: Viser adresseringsmetode

SIP1: Viser oppkobling mot sentral.

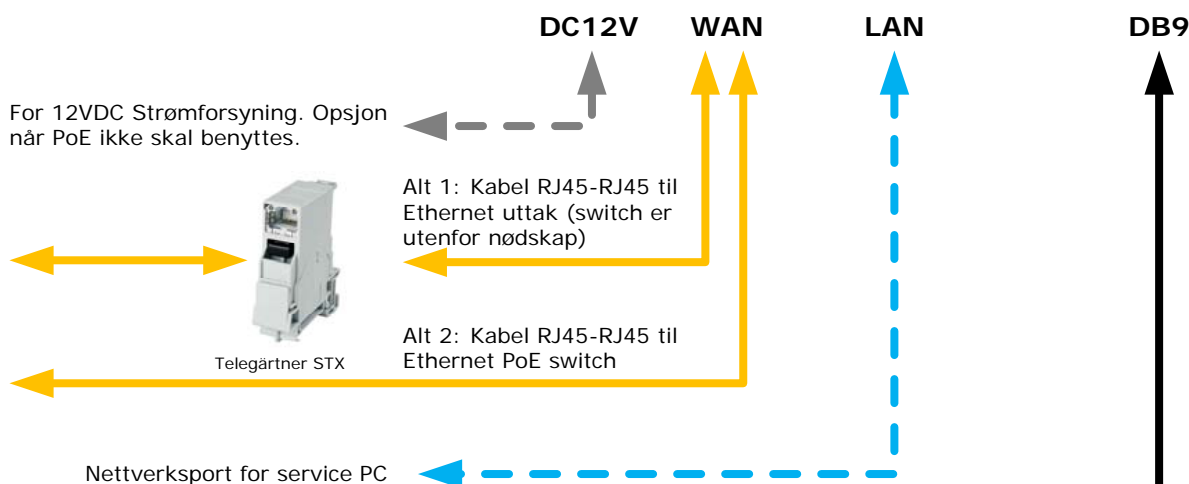
Pluggbare tilkoblinger på bakside forenkler installasjon, drift og vedlikehold. Egen LAN port for service-PC.

LED Statuslampe i front:

Blinkende grønn sakte (ok), blinkende grønn raskt (opkall), fast grønn (samtale), slukket (feil).



Ethernet PoE Switch



Selvtest registrerer feil umiddelbart og gir alarm (status-endring) på følgende måte:

- a) 24VDC på 1-4-7
- b) Høy=grønn
- c) Lav=rød

- Rør på - Test ok - System operativt	3	6	9
- Rør av - Test ok - System operativt	3	6	9
- Rør på - Test feil - System ikke operativt	3	6	9
- Rør av eller manglende driftsspennning - Test feil - System ikke operativt	3	6	9

Kun i redundant modus:

- Rør på - Redundans aktivert, telefonsystem operativt	3	6	9
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NB: SIP1 (6) er lav i opptil 3 minutter mens telefonene registrerer seg i backup sentral.

Releutganger

Normal drift – alt ok



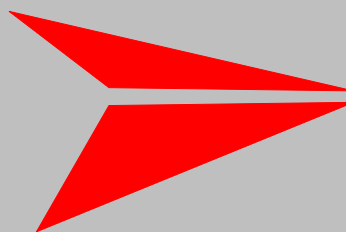
Alarmutgang SIP1 aktiveres (går lav) når telefonen mister kontakt med sentral. Dette skjer ved feil på sentral, nettverk, telefon eller driftsspennning til telefon. SIP1 aktiveres også ved feil på akustisk selvtest.

Akustisk selvtest:

Sjekk mikrofon og høyttaler i håndsett + høyttaler i telefon. Konfigureres via nettleser og har følgende testoppsett:

- Intervall fra 1-24 timer
- Manuelt

Kabel DB9-DB9 til DB9/RK adapter



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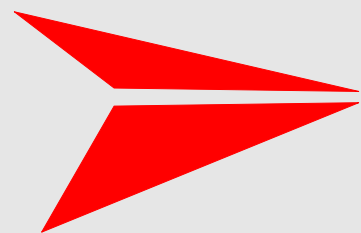
Nødtelefon for vegtunnel

SIP telefon med selvtest og meldekontakt for PLS

Catena DUETTO VoIP G4 er en ny **IP-basert nødtelefon** for vegtunnel. Telefonen, som er laget i støpt aluminium, er **designet for å takle tøffe forhold** enten det er støv, fuktighet eller røff bruk. Den er derfor meget godt egnet for tunneler, flyplasser, kraftstasjoner, offentlige plasser/bygninger og industri generelt. Det nye med G4 er **akustisk selvtest** og **status LED** på front, noe som betyr enklere drift/vedlikehold og større trygghet for publikum.



DUETTO VoIP G4



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Catena DUETTO VoiP G4

Catena DUETTO G4 leveres for innfelt montasje, er **støv og vanntett** (IP65 mot publikum) og er produsert i meget solid materiale. Ledningen mellom telefonen og håndsett er metallarmert for å hindre hærverk og slitasje.

Catena DUETTO G4 har i tillegg avanserte muligheter for **selvtest** der vitale deler testes automatisk, også håndsett, høyttaler og oppkobling til sentral. Status avleses via grønn LED på front, den gir også potensialfri releutgang til PLS og trenger ikke startes fra SRO, den gir **alarm så snart en feilsituasjon oppstår**. Ved innfelling har man tilgang til display som viser IP-adresse og status mot sentral, en stor **fordel** ved installasjon, drift og vedlikehold. Her finnes også **egen port for service PC** slik at man har tilgang til både telefon og sentral fra telefonen. Telefonen er **pluggbar** for enkel installasjon, RJ45 for Ethernet og DB9 for alarmer og rør av.

Inkludert i leveranse:

- Nødtelefon Duetto VoiP
- 4-språklig brukerveiledning på front
- Nettverkskabel 2m RJ45-RJ45
- I/O kabel 2m DB9-DB9
- DB9-Rekkeklemme adapter for DIN-skinne
- Pakning, skruer og spesialverktøy (innfelt)
- Skruer og festeskinner (på vegg)



Pluggbare tilkoblinger på bakside av telefon (innfelling).



Servicedisplay på bakside av telefon (innfelling)



DB9-Rekkeklemme adapter for DIN skinne

Teknisk informasjon :

Materiale i kapsling:	Støpt aluminium, lakkert gul.
Materiale i håndsett:	Kunststoff, sort.
Håndsett kabel:	Rustfritt syrefast stål, 200Kg bruddstyrke. Lengde 70cm.
Vekt:	1.7Kg eller 3.8kg (innfelt eller på vegg).
Dimensjon:	På vegg: 330x205x120mm (hxbxd inkludert håndsett). Innfelt: 315x190x40/40/60mm (forside/bakside med ramme/bakside uten ramme).
Montering:	På vegg: Festes fra bakside med 4 stk. M8x12 skruer (gjennom dør eller festeprofil). Innfelt: Festes fra forside med 6 stk. M6 Torx 30.
Tetthet:	Opsjon: Innfellingsramme for å redusere innstikk fra 60mm til 40mm (innfelt). På vegg: IP65 (hele enheten). Innfelt: IP65 (mot publikum).
Driftstemperatur:	-40°C til +70°C.
Driftsspenning:	PoE eller 12-24VDC.
Effektforbruk:	Max. 2W i operativ tilstand.
Grensesnitt mot Ethernet:	RJ45 kontakter på telefon. En for nettverk og en for service PC (innfelt).
Grensesnitt mot PLS:	DB9 kontakt på telefon (releutganger for status og rør av).
Status LED:	Grønn LED på front som indikerer både status og oppkall.
Merking:	Flerspråklig brukerveiledning på front, adresse på bakside.
Talekvalitet:	STI>0.9, testet som system med nødtelefon, sentral og servicetelefon. Test utført av nøytralt testlaboratorium i henhold til IEC 60268-16, metode "STI" (Seksjon 4.2 Appendix A). Justerbart talenivå.

Partnummer & beskrivelse :

Beskrivelse	Operasjon	Part #	Montasje	Statusovervåking/Test
Catena DUETTO VoiP PoE Innfelt G4	Håndsett (Hotline)	VoiP-D-1001-G4-PoE	Innfelt	Håndsett, høyttaler, forbindelse til sentral, bortfall av driftsspenning. Status LED.
Catena DUETTO VoiP PoE Box G3	Håndsett (Hotline)	VoiP-D-1002-G3-PoE	På vegg	Forbindelse til sentral, bortfall av driftsspenning
Catena DUETTO VoiP PoE Box Key G3	Tastatur	VoiP-D-1003-G3-PoE	På vegg	Forbindelse til sentral, bortfall av driftsspenning
Catena DUETTO VoiP Innfellingsramme		MR1-Duetto	Mellom telefon og dør	



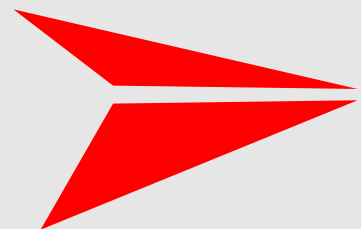
IP Nødtelefon for vegtunnel

IP telefon med akustisk test og meldekontakt for PLS



TufTel IP 3495 er IP-basert og er levert til nærmere **100 tunnelanlegg** i Norge siden den ble lansert i 2008. Telefonen tilkobles Ethernet og all kommunikasjon er digital. Telefonen er basert på SIP protokoll og konfigureres via web.

TufTel IP er **designet for å takle tøffe og fuktige forhold**, og er derfor meget godt egnet for tunneller, kraftstasjoner, offentlige plasser/bygninger og industri generelt.



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TufTel IP 3495

TufTel IP 3495



Tuftel IP 3495 er **støv og vanntett (IP65)** og er produsert i meget solid materiale. Ledningen mellom telefonen og håndsettet er metallarmert for å hindre hærverk og slitasje.

Tuftel IP 3495 har i tillegg mulighet for akustisk **selvttest** der testing gjøres via styresystemet. Telefonen er i **"Hotline" utførelse**, ("løft av røret og vent på svar"), men kan også leveres med tastatur (Tuftel IP 3395).

Installasjon

(Gjelder ved Lancom 1722/1723/1724 VoIP PBX/Gateway)

All **konfigurasjon** som IP-adresser, telefonnummer og SIP oppsett må gjøres før telefonen plasseres ute i anlegget, vanligvis leveres den **ferdig testet og konfigurert** før leveranse. All montering gjøres uten å åpne telefonen og alle tilkoblinger er pluggbare (2 stk 2m RJ45-kabler i rygg på telefonen).

Lysindikasjon for gjeldende port på switch skal lyse grønt når telefonen er riktig tilkoblet.

Telefonen vil melde opp seg selv til **Lancom VoIP PBX/gateway** etter noen sekunder. Det anbefales å benytte Lancom **"LANMonitor"** programvare for å overvåke status på SIP-telefoner, sentraler og ISDN.

Merking

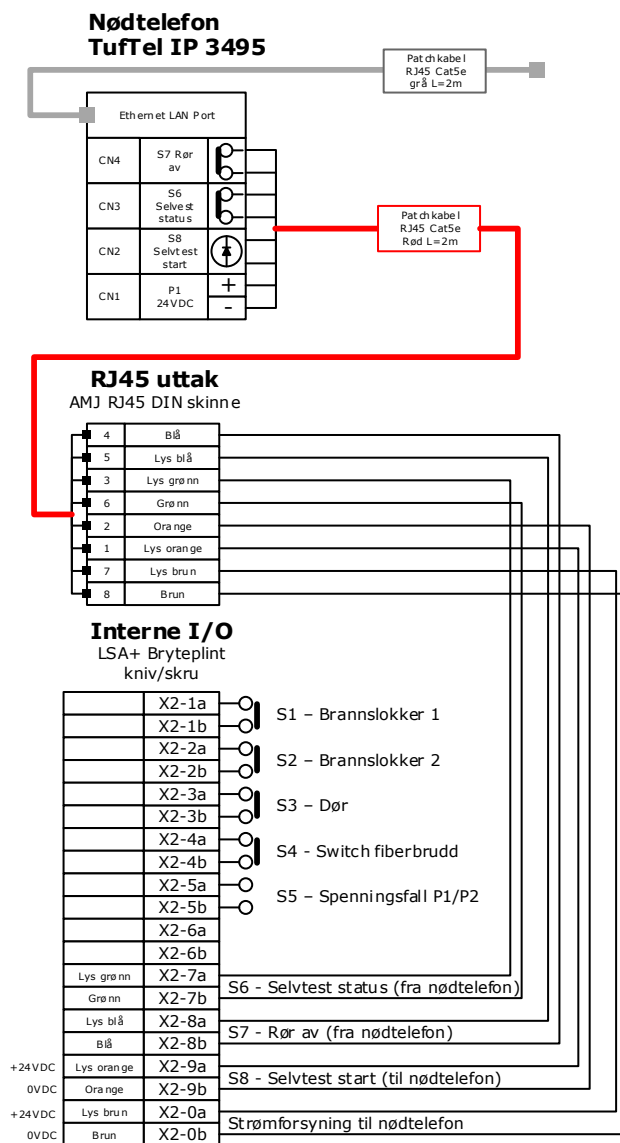
Tuftel IP 3495 leveres med **flerspråklig brukerveiledning** montert på front.



Bakside av dør/
skillevegg i
nødskap

- Tuftel IP festes fra bakside med 4 stk M6x16 skruer
- Kabel kveiles opp og festes på **L-brakett**
- **Rød** kabel i **RJ45 uttak**
- **Grå** kabel i **Ethernet switch**
- Hullmønster leveres på forespørsel
- Catena nødskap og nødkiosker er forberedt for Tuftel IP

Tilkoblinger:



Rød kabel må termineres i egnet uttak (AMJ/ Kronepint, WAGO etc).

Akustisk selvttest

Testen startes ved at inngang S8 på telefon legges høy fra PLS i 10 sekunder. Godkjent test vil legge S6 høy i 5 sekunder innenfor vinduet på 10 sekunder fra PLS.

Feiler testen vil ikke S6 aktiveres innenfor vinduet på 10 sekunder. Testen kan dermed håndteres direkte av styresystemet.

Partnummer & beskrivelse :

Beskrivelse	Operasjon	Part #	Grensesnitt telefon	Mål	Driftspenning
Tuftel IP 3495	Håndsett (Hotline)	T3495IP-2	Ethernet 10/100BTx (RJ45)	237x287x135mm (bxhxd)	24VDC
Tuftel IP 3395	Håndsett og tastatur	T3395IP-2	Ethernet 10/100BTx (RJ45)	237x287x135mm (bxhxd)	24VDC

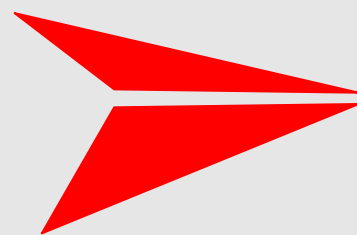


Nødtelefon for vegtunnel

Analog telefon med akustisk test og meldekontakt for PLS



TufTel 3495 er ny versjon av TufTel 2495 som ble utviklet i samarbeide med Statens Vegvesen. Denne er etter hvert blitt "standard" analog nødtelefon for bruk i tunnel. Telefonen er **designet for å takle tøffe og fuktige forhold**, og er derfor meget godt egnet for tunneller, flyplasser, kraftstasjoner, offentlige plasser/bygninger og industri generelt.



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TufTel 3495

Bruk av egen nødtelefon er den beste måten å tilkalle hjelp på ved en ulykke eller driftstans, spesielt der det ikke er mulig å bruke mobiltelefon.

Tuftel 3495 er **støv og vanntett (IP65)** og er produsert i meget solid materiale. Ledningen mellom telefonen og håndsettet er metallarmert for å hindre hærverk og slitasje.

Tuftel 3495 har i tillegg avanserte muligheter for **selvtest**, ekstern blinklampe eller ekstern ringeklokke. Telefonen er i **"Hotline" utførelse**, ("løft av røret og vent på svar"), men kan også leveres med tastatur (Tuftel 3395).

Tuftel 3495 er **enkel å montere** og kan kobles opp mot vanlige PBX'er (både analoge og ISDN).

Installasjon

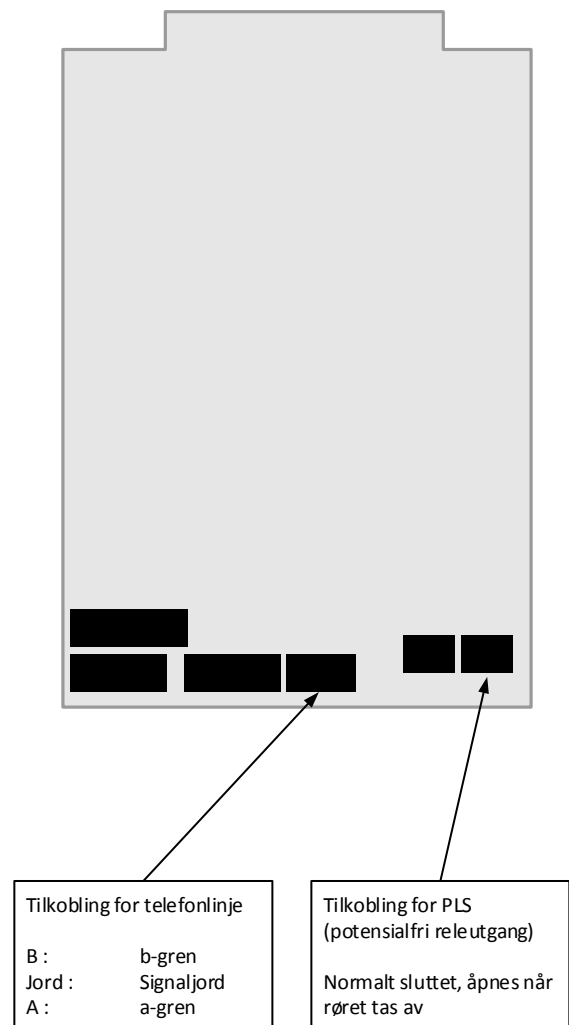
Analog telefonlinje kobles til skruterminaler merket med A og B. Hvis telefonkabelen allerede er tilkoblet en telefonsentral (PBX) er det viktig at A og B ikke kortsluttes. Jord i midten på rekkeklemme tilkobles signaljord for ekstra sikkerhet. Releutgang til PLS er potensialfri og tilkobles rekkeklemme på høyre side av printkort (se bilde). Kabelnippel tres på kabel som trekkes gjennom kabelinnføring i bunn eller bakkant av telefon. La det være minst 10cm med kabel inne i telefon.

Monter telefonen på et plant underlag med passende skruer. Merking av telefonen på frontplate kan gjøres med en vannfast tusj.

Manuell selvtest

Slå nummer til utvalgt telefon og la det ringe i ca. 1 minutt. Telefonen vil da elektronisk løfte av røret. En lang pipetone vil høres og indikerer at selvtesten er OK.

Tilkoblinger på kretskort



Testing og normal bruk

Sjekk at det er medhør ved å blåse forsiktig inn i mikrofon når røret er av. En skal da høre en tilsvarende blåselyd i høyttaler. Merk at lyden i høyttaler kan være kraftig.

- For kontakt med sentral : Løft av røret og vent på svar

Partnummer & beskrivelse :

Beskrivelse	Operasjon	Part #	Grensesnitt telefon	Grensesnitt PLS
TufTel 3495	Håndsett (Hotline)	T3495	Analog telefonlinje (skruterminale)	Releutgang (potensialfri)
TufTel 3395	Håndsett og tastatur	T3395	Analog telefonlinje (skruterminale)	Releutgang (potensialfri)

J&R Industritelefon

Analog eller VoiP – med eller uten dør

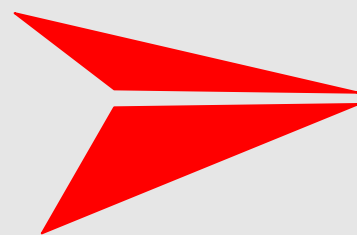


J&R leverer et bredt utvalg av **robuste** telefoner, både **analoge og IP/SIP** baserte (VoiP).

De er **vann- og støvtette**, kan leveres med og uten **dør**, med og uten **tastatur**, eller med egne **hurtigtaster** for direkteopkall.

Dermed finnes det telefoner som passer til de **fleste miljøer**, enten det er **offshore** (Ex område), landbasert **industri** eller **bygg**.

Egen **nødtelefon** er utviklet for bruk i vegtunnel (**Duetto VoiP**).



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J&R Industritelefoner



JR-103-CB



JR-103-FK



Duetto VoIP



JR-102-SC



JR-101-CB



JR-101-FK

Teknisk informasjon :

Teknologi:	VoiP (opsjon analog)
Materiale i kapsling:	Støpt aluminium, gul (rød, blå, grønn eller svart på bestilling).
Materiale i håndsett:	Kunststoff, sort.
Håndsett kabel:	Rustfritt stål, 200Kg bruddstyrke, 35cm.
Montering:	Braketter for veggmontasje (inkludert).
Tetthet:	IP66 (hele enheten).
Driftstemperatur:	-30°C til +65°C.
Effektforbruk:	Ca. 1.8W
Driftsspenning:	VoiP: PoE eller 12-24VDC Analog: Linje
Vekt:	Med dør: Ca. 6Kg Uten dør: Ca. 5Kg
Dimensjon:	Med dør: 204x334x126mm Uten dør: 204x334x109mm

Partnummer & beskrivelse :

Beskrivelse	Operasjon	Part #	Montasje
J&R med dør, VoiP, hotline	Automatisk ved avløft	JR-101-CB-VoiP	På vegg
J&R med dør, VoiP, tastatur	Tastatur	JR-101-FK-VoiP	På vegg
J&R med dør, VoiP, handsfree	Knapp	JR-102-SC-VoiP	På vegg
J&R uten dør, VoiP, hotline	Automatisk ved avløft	JR-103-CB-VoiP	På vegg
J&R uten dør, VoiP, tastatur	Tastatur	JR-103-FK-VoiP	På vegg

PD (Powered Devices)

Utstyr som får driftspenning via datakabelen:

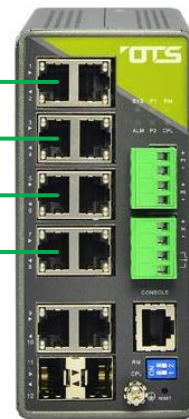
- Nødtelefoner og serevicetelefon
- Videokamera
- WLAN aksesspunkt
- PoE Extraktor (for utstyr uten PoE)



PSE (Power Sourcing Equipment)

Utstyr som gir driftspenning via datakabelen:

- Ethernet Switch
- Ethernet MediaConverter
- Ethernet Injektor (brukes sammen med switch uten PoE)



OT Systems
IET8222MPH-S-DR

Standarder

Standard	Effekt (Tilført)	Effekt (Avgitt)	Driftsspenning
802.3af (PoE)	15.4W	12.95W	>48VDC
802.3at (PoE+)	30W	25.5W	>54VDC
802.3bt (PoE++)	60W	50W	>54VDC
<i>Merknad: Er under utarbeidelse og planlagt godkjent i 2017. Blir kompatibel med eksisterende 802.3af og 802.3at.</i>			
802.3bt (PoE++)	90W	80W	>54VDC
<i>Merknad: Er under utarbeidelse og planlagt godkjent i 2017. Blir kompatibel med eksisterende 802.3af og 802.3at.</i>			

Merk at strømforsyning til switch må dimensjoneres i forhold til antall PoE porter og max. last (W) pr. port.

De nye høyeffekt standardene kommer til å stille større krav til kabling på grunn av varme.

Project/Customer	Subject	
Nettverk i vegtunnel	PoE	
	Revision	1
<p>Tel : +47 22 80 42 60 Fax : +47 22 80 42 61</p>	Date	Sign.
	03.08.17	IS



LANCOM 1793VA

For professional telephony at Supervectoring connections

Efficient workflows depend on network infrastructures that offer high performance and reliability. Reason enough for you to rely on the expert for secure VPN site connectivity and easy All-IP migration. The LANCOM 1793VA supports VDSL Super Vectoring with up to 300 Mbps. Designed for the combined operation of ISDN/analog and VoIP telephony components, it is the ideal router for small and medium-sized enterprises.

- › Integrated VDSL Super Vectoring modem for up to 300 Mbps (backwards compatible with VDSL2 / ADSL2+)
- › Continued use of existing ISDN and analog components after migrating to All-IP
- › Telephony features thanks to integrated LANCOM VCM (Voice Call Manager) & SBC (session border controller)
- › 2 x ISDN S0 (TE/NT + NT) for point-to-point or multipoint line configuration, 4x analog (internal) / fax
- › SD-WAN – automatic VPN and VLAN configuration via the LANCOM Management Cloud
- › 5 integrated IPSec VPN channels (25 optional)
- › Network virtualization with up to 16 networks on one device (ARF)
- › Security Made in Germany
- › Maximum future compatibility, reliability and security

LANCOM 1793VA

Support for VDSL Supervectoring

VDSL Supervectoring achieves higher data rates on existing copper lines. Speeds of up to 300 Mbps are possible. The LANCOM 1793VA offers full Supervectoring support while remaining backwards compatible with VDSL2 and ADSL2+.

Continued use of existing ISDN and analog components

The LANCOM 1793VA translates between ISDN, analog and VoIP. Along with the latest VoIP equipment, you can continue to operate your existing ISDN and analog components without having to replace them. Even after switching to the new All-IP connection, this cost-saving solution conveniently and professionally integrates your ISDN and analog components. Operating a combination of analog, ISDN and VoIP PBX devices directly at the LANCOM router is also an option.

Professional telephony with the LANCOM VCM (Voice Call Manager)

The LANCOM Voice Call Manager is already integrated into the LANCOM 1793VA and provides advanced telephony support. It manages all aspects of the telephony and controls all of the PBX components connected to the router. Furthermore, it enables the easy integration of DECT telephones by autoprovisioning with the LANCOM DECT 510 IP base station.

Integrated session border controller

The LANCOM Voice Call Manager provides the functions of a Session Border Controller: This ensures that external (unsecure) and internal (secure) networks are kept separate. Also, voice packets are given preference (Quality of Service) thanks to bandwidth reservation, which ensures a high call quality. In addition, the VCM as a SIP proxy enables the professional management of signaling and voice data for high security in the set up, implementation and teardown of telephone conversations, including any protocol conversion by means of transcoding.

Professional VPN solution

VPN solutions from LANCOM offer flexible, economical and secure networking of headquarters, subsidiaries, branches, sites and home-office workplaces in small, mid-sized and large enterprises. The LANCOM 1793VA supports up to 5 simultaneous IPsec VPN channels, with optional upgrades for 25 channels.

Radical simplification of the configuration with SD-WAN

In combination with the LANCOM Management Cloud, the LANCOM 1793VA opens the way for automated management. The software-defined WAN (SD-WAN) enables the automatic setup of secure VPN connections between sites, including network virtualization and backup across the wide-area network: A few mouse clicks is all it takes to enable the VPN function and select the required VLANs for each site. The laborious configuration of individual tunnel endpoints is no longer required at all.

LANCOM 1793VA

LCOS 10.32

Layer 2 features	
VLAN	4.096 IDs based on IEEE 802.1q, dynamic assignment, Q-in-Q tagging
Multicast	IGMP-Snooping
Protocols	Ethernet over GRE-Tunnel (EoGRE), L2TPv3, ARP-Lookup, LLDP, DHCP option 82, IPv6-Router-Advertisement-Snooping, DHCPv6-Snooping, LDRA (Lightweight DHCPv6 Relay Agent), Spanning Tree, Rapid Spanning Tree, ARP, Proxy ARP, BOOTP, DHCP, LACP
Layer 3 features	
Firewall	Stateful inspection firewall including packet filtering, extended port forwarding, N:N IP address mapping, packet tagging, support for DNS targets, user-defined rules and notifications
Quality of Service	Traffic shaping, bandwidth reservation, DiffServ/TOS, packet size control, layer-2-in-layer-3 tagging
Security	Intrusion Prevention, IP spoofing, access control lists, Denial of Service protection, detailed settings for handling reassembly, session-recovery, PING, stealth mode and AUTH port, URL blocker, password protection, programmable reset button
PPP authentication mechanisms	PAP, CHAP, MS-CHAP, and MS-CHAPv2
High availability / redundancy	VRRP (Virtual Router Redundancy Protocol), analog/GSM modem backup
Router	IPv4-, IPv6-, NetBIOS/IP multiprotokoll router, IPv4/IPv6 dual stack
SD-WAN Application Routing	SD-WAN Application Routing in connection with the LANCOM Management Cloud
Router virtualization	ARF (Advanced Routing and Forwarding) up to separate processing of 16 contexts
IPv4 services	HTTP and HTTPS server for configuration by web interface, DNS client, DNS server, DNS relay, DNS proxy, dynamic DNS client, DHCP client, DHCP relay and DHCP server including autodetection, NetBIOS/IP proxy, NTP client, SNTP server, policy-based routing, Bonjour-Proxy, RADIUS
IPv6 services	HTTP and HTTPS server for configuration by web interface, DHCPv6 client, DHCPv6 server, DHCPv6 relay, DNS client, DNS server, dynamic DNS client, NTP client, SNTP server, Bonjour-Proxy, RADIUS
Dynamic routing protocols	RIPv2, BGPv4, OSPFv2, LISP (Locator/ID Separation Protocol)
IPv4 protocols	DNS, HTTP, HTTPS, ICMP, NTP/SNTP, NetBIOS, PPPoE (server), RADIUS, RADSEC (secure RADIUS), RTP, SNMPv1,v2c,v3, TFTP, TACACS+
IPv6 protocols	NDP, stateless address autoconfiguration (SLAAC), stateful address autoconfiguration (DHCPv6), router advertisements, ICMPv6, DHCPv6, DNS, HTTP, HTTPS, PPPoE, RADIUS, SMTP, NTP, BGP, LISP, Syslog, SNMPv1,v2c,v3
WAN operating mode	VDSL, ADSL1, ADSL2 or ADSL2+ additional with external DSL modem at an ETH port
WAN protocols	PPPoE, Multi-PPPoE, ML-PPP, GRE, EoGRE, PPTP (PAC or PNS), L2TPv2 (LAC or LNS), L2TPv3 with Ethernet-Pseudowire and IPoE (using DHCP or no DHCP), RIP-1, RIP-2, VLAN, IPv6 over PPP (IPv6 and IPv4/IPv6 dual stack session), IP(v6)oE (autokonfiguration, DHCPv6 or static)
Tunneling protocols (IPv4/IPv6)	6to4, 6in4, 6rd (static and over DHCP), Dual Stack Lite (IPv4-in-IPv6-Tunnel)
Security	
Intrusion Prevention	Monitoring and blocking of login attempts and port scans
IP spoofing	Source IP address check on all interfaces: only IP addresses belonging to the defined IP networks are allowed
Access control lists	Filtering of IP or MAC addresses and preset protocols for configuration access
Denial of Service protection	Protection from fragmentation errors and SYN flooding
General	Detailed settings for handling reassembly, PING, stealth mode and AUTH port
URL blocker	Filtering of unwanted URLs based on DNS hitlists and wildcard filters. Extended functionality with Content Filter Option
Password protection	Password-protected configuration access can be set for each interface
Alerts	Alerts via e-mail, SNMP traps and SYSLOG
Authentication mechanisms	PAP, CHAP, MS-CHAP and MS-CHAPv2 as PPP authentication mechanism
Anti-theft	Anti-theft ISDN site verification over B or D channel (self-initiated call back and blocking)
Adjustable reset button	Adjustable reset button for 'ignore', 'boot-only' and 'reset-or-boot'
High availability / redundancy	
VRRP	VRRP (Virtual Router Redundancy Protocol) for backup in case of failure of a device or remote station.
FirmSafe	For completely safe software upgrades thanks to two stored firmware versions, incl. test mode for firmware updates

LANCOM 1793VA

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High availability / redundancy	
ISDN backup	In case of failure of the main connection, a backup connection is established over ISDN. Automatic return to the main connection
Analog/GSM modem backup	Optional operation of an analog or GSM modem at the serial interface
Load balancing	Static and dynamic load balancing over up to 4 WAN connections (incl. client binding). Channel bundling with Multilink PPP (if supported by network operator)
VPN redundancy	Backup of VPN connections across different hierarchy levels, e.g. in case of failure of a central VPN concentrator and re-routing to multiple distributed remote sites. Any number of VPN remote sites can be defined (the tunnel limit applies only to active connections). Up to 32 alternative remote stations, each with its own routing tag, can be defined per VPN connection. Automatic selection may be sequential, or dependant on the last connection, or random (VPN load balancing)
Line monitoring	Line monitoring with LCP echo monitoring, dead-peer detection and up to 4 addresses for end-to-end monitoring with ICMP polling
VPN	
IPSec over HTTPS	Enables IPSec VPN based on TCP (at port 443 like HTTPS) which can go through firewalls in networks where e. g. port 500 for IKE is blocked. Suitable for client-to-site connections and site-to-site connections. IPSec over HTTPS is based on the NCP VPN Path Finder technology
Number of VPN tunnels	Max. number of concurrent active IPSec, PPTP (MPPE) and L2TPv2 tunnels: 5 (25 with VPN 25 Option). Unlimited configurable connections. Configuration of all remote sites via one configuration entry when using the RAS user template or Proadaptive VPN.
Hardware accelerator	Integrated hardware accelerator for 3DES/AES encryption and decryption
Realtime clock	Integrated, buffered realtime clock to save the date and time during power failure. Assures timely validation of certificates in any case
Random number generator	Generates real random numbers in hardware, e. g. for improved key generation for certificates immediately after switching-on
1-Click-VPN Client assistant	One click function in LANconfig to create VPN client connections, incl. automatic profile creation for the LANCOM Advanced VPN Client
1-Click-VPN Site-to-Site	Creation of VPN connections between LANCOM routers via drag and drop in LANconfig
IKE, IKEv2	IPSec key exchange with Preshared Key or certificate (RSA signature, digital signature)
Smart Certificate*	Convenient generation of digital X.509 certificates via an own certification authority (SCEP-CA) on the webpage or via SCEP.
Certificates	X.509 digital multi-level certificate support, compatible with Microsoft Server / Enterprise Server and OpenSSL. Secure Key Storage protects a private key (PKCS#12) from theft.
Certificate rollout	Automatic creation, rollout and renewal of certificates via SCEP (Simple Certificate Enrollment Protocol) per certificate hierarchy
Certificate revocation lists (CRL)	CRL retrieval via HTTP per certificate hierarchy
OCSF Client	Check X.509 certifications by using OCSF (Online Certificate Status Protocol) in real time as an alternative to CRLs
OCSF Server/Responder*	Offers validity information for certificates created with Smart Certificate via OCSF
XAUTH	XAUTH client for registering LANCOM routers and access points at XAUTH servers incl. IKE-config mode. XAUTH server enables clients to register via XAUTH at LANCOM routers. Connection of the XAUTH server to RADIUS servers provides the central authentication of VPN-access with user name and password. Authentication of VPN-client access via XAUTH and RADIUS connection additionally by OTP token
RAS user template	Configuration of all VPN client connections in IKE ConfigMode via a single configuration entry
Proadaptive VPN	Automated configuration and dynamic creation of all necessary VPN and routing entries based on a default entry for site-to-site connections. Propagation of dynamically learned routes via RIPv2 if required
Algorithms	3DES (168 bit), AES-CBC and -GCM (128, 192 or 256 bit), Blowfish (128 bit), RSA (1024-4096 bit), ECDSA (P-256-, P-384-, P-521-curves) and CAST (128 bit). OpenSSL implementation with FIPS-140 certified algorithms. MD-5, SHA-1, SHA-256, SHA-384 or SHA-512 hashes
NAT-Traversal	NAT-Traversal (NAT-T) support for VPN over routes without VPN passthrough
LANCOM Dynamic VPN	Enables VPN connections from or to dynamic IP addresses. The IP address is communicated via ISDN B- or D-channel or with the ICMP or UDP protocol in encrypted form. Dynamic dial-in for remote sites via connection template
Dynamic DNS	Enables the registration of IP addresses with a Dynamic DNS provider in the case that fixed IP addresses are not used for the VPN connection
Specific DNS forwarding	DNS forwarding according to DNS domain, e.g. internal names are translated by proprietary DNS servers in the VPN. External names are translated by Internet DNS servers
Split DNS	Allows the selective forwarding of traffic for IKEv2 depending on the addressed DNS domain.
IPv4 VPN	Connecting private IPv4 networks

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VPN	
IPv4 VPN over IPv6 WAN	Use of IPv4 VPN over IPv6 WAN connections
IPv6 VPN	Connecting private IPv6 networks
IPv6 VPN over IPv4 WAN	Use of IPv6 VPN over IPv4 WAN connections
Radius	RADIUS authorization and accounting, outsourcing of VPN configurations in external RADIUS server in IKEv2, RADIUS CoA (Change of Authorization)
*)	Only with VPN 25 option
Performance	
Routing-Performance	Data regarding the overall routing performance can be found inside the LANCOM tech paper "Routing-Performance" on www.lancom-systems.com
VoIP	
Number of local subscribers	10 (up to 40 with VoIP +10 Option)
Number of local ISDN subscribers	Up to 2 internal ISDN buses each with 2 parallel channels and each up to 10 telephone numbers
Number of simultaneous VoIP connections	Up to 60 external VoIP connections depending on code conversion, echo canceling and load
Functionality	Hold/Request, Swap, Transfer, Call Forwarding (CFU, CFB, CFNR), number display/suppression (CLIP, CLIR), suppression of second call (Busy on Busy), immediate outgoing line, hunt groups, call diversion, overlap dialing
Hunt groups	Hunt group cascades, Call diversion, simultaneously or sequentially. Automatic forwarding after timeout or when busy/unreachable
Multi login	Registration of several local VoIP terminal devices with the same number/ID.
Call router	Central switching of all incoming and outgoing calls. Number translation by mapping, numeral replacement and number supplementation. Configuration of line and route selection incl. line backup. Routing based on calling and called number, SIP domain and line. Blocking of telephone numbers or blocks of telephone numbers. Inclusion of local subscribers into the number range of an upstream PBX. Supplement/remove line-related prefixes or switchboard numbers.
SIP registrar	Management of local VoIP users/VoIP PBXs, registration at VoIP providers/upstream VoIP PBXs. Service location (SRV) support. Line monitoring for SIP trunk, link, remote gateway and SIP PBX line
SIP proxy	Up to 25 SIP-provider accounts (up to 55 with VoIP +10 Option), up to 4 SIP PBXs incl. line backup. SIP connections from/to internal subscribers, SIP providers and SIP PBXs. Automatic bandwidth management and automatic configuration of the firewall for SIP connections.
SIP gateway	Conversion of analog or ISDN telephone calls to SIP calls, and vice versa. Local ISDN and analog subscribers register as local SIP users, and local ISDN/analog subscribers automatically register as SIP users at upstream SIP PBXs or SIP providers. Number translation between internal numbers and MSN/DDI
SIP trunk	Call switching based on extension numbers to/from VoIP PBXs/VoIP providers (support of the VoIP-DDI functions compliant with ITU-T Q.1912.5). Mapping of entire VoIP telephone number blocks
SIP link	Call switching of any numbers to/from SIP PBXs/SIP providers. Mapping of entire SIP telephone number blocks
Media proxy	Termination and interconnection of multiple media streams. Control of media sessions. IP address and port translation for media stream packets. Connection of parties at media stream level where a call transfer in SIP (REFER) is not possible
Session Border Controller (SBC)	Separation of insecure and secure networks, QoS, management of signaling and voice data, transcoding
Media protocols	RTP, SIPs and SRTP
Supported providers	German Telekom, QSC, Ecotel and Sipgate
ISDN features	Operation at ISDN exchange line or at ISDN extension line of existing PBXs. Provision of exchange lines or extension lines
Analog features	Internal FXS ports for one analog terminal device each, or as an analog PBX exchange line.
Audio properties	Echo canceling (G.168) with automatic deactivation during fax transmission, automatic adaptive jitter buffer. Inband tone signaling compliant with EU standards and country-specific. Voice encoding with G.711 μ -law/A-law (64 kbps)
SIP-Codec support	SIP only: G.711 μ -law/A-law (64 kbps), G.722, G.723, G.726, G.729, iLBC, PCM (16, 20 und 24 Bit, Mono und Stereo), OPUS, AAC (LC, HE HEv2), MPEG Layer II, ADPCM 4SB. DTMF support (Inband, RFC2833, SIP-INFO)
Fax transmission	Transmission of fax via SIP on the LAN/WAN side with T.38 or G.711. Conversion of SIP fax with T.38 and break-in/break-out at the outside line to ISDN G.711 with service signalisation. Connection and conversion to SIP T.38 or G.711 for SIP, analog or ISDN fax machines. Compatible to SwyxFax on true G.711 SIP lines.

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VoIP	
Auto QoS	Automatic dynamic bandwidth reservation per SIP connection. Voice packet prioritization, DiffServ marking, traffic shaping (incoming/outgoing) and packet-size management of non-prioritized connections compared to VoIP. Independent settings for DiffServ marking of signaling (SIP) and media streams (RTP)
VoIP monitoring	Reporting of Call Data Records (CDR) via SYSLOG or e-mail. Status display of subscribers, lines, and connections. Logging of VoIP Call Manager events in LANmonitor. SYSLOG and TRACE for voice connections. Active monitoring even with SNMP
Autoprovisioning	Automatic network and VoIP integration of LANCOM DECT 510 IP base station
SIP ALG	The SIP ALG (Application Layer Gateway) acts as a proxy for SIP communication. For SIP calls the ALG opens the necessary ports for the corresponding media packets. Automatic address translation (STUN is no longer needed).
Interfaces	
WAN: VDSL / ADSL2+	<ul style="list-style-type: none"> > VDSL2 compliant with ITU G.993.2, profiles 8a, 8b, 8c, 8d, 12a, 12b, 17a, 35b > VDSL Supervectoring as per ITU G.993.2 (Annex Q) > VDSL2 Vectoring: as per ITU G.993.5 (G.Vector) > ADSL2+ over ISDN as per ITU G.992.5 Annex B/J with DPBO, ITU G.992.3/5 and ITU G.992.1 > ADSL2+ over POTS as per ITU G.992.5 Annex A/M with DPBO, ITU G.992.3 and ITU G.992.1 > Supports one virtual ATM circuit (VPI, VCI pair) at a time
Ethernet ports	4 individual 10/100/1000 Mbps Ethernet ports; up to 3 ports can be operated as additional WAN ports with load balancing. Ethernet ports can be electrically disabled within LCOS configuration. The ports support energy saving according to IEEE 802.3az
Port configuration	Each Ethernet port can be freely configured (LAN, DMZ, WAN, monitor port, off). LAN ports can be operated as a switch or separately. Additionally, external DSL modems or termination routers can be operated as a WAN port with load balancing and policy-based routing. DMZ ports can be operated with their own IP address range without NAT
USB 2.0 host port	USB 2.0 hi-speed host port for connecting USB printers (USB print server), serial devices (COM port server), USB data storage (FAT file system); bi-directional data exchange is possible
ISDN	1x ISDN BRI port (NT) and 1x internal/external ISDN port (NT/TE)
Analog	4x internal FXS ports (Analog1, Analog2, Analog3, Analog4) each for one analog device
Serial interface	Serial configuration interface / COM port (8 pin Mini-DIN): 9,600 - 115,000 baud, suitable for optional connection of analog/GPRS modems. Supports internal COM port server and allows for transparent asynchronous transmission of serial data via TCP
Management and monitoring	
Management	LANCOM Management Cloud, LANconfig, WEBconfig, LANCOM Layer 2 management (emergency management)
Management functions	Alternative boot configuration, voluntary automatic updates for LCMS and LCOS, individual access and function rights up to 16 administrators, RADIUS and RADSEC user management, remote access (WAN or (W)LAN, access rights (read/write) adjustable separately), SSL, SSH, HTTPS, Telnet, TFTP, SNMP, HTTP, access rights via TACACS+, scripting, timed control of all parameters and actions through cron job
FirmSafe	Two stored firmware versions, incl. test mode for firmware updates
automatic firmware update	configurable automatic checking and installation of firmware updates
Monitoring	LANCOM Management Cloud, LANmonitor, WLANmonitor
Monitoring functions	Device SYSLOG, SNMPv1,v2c,v3 incl. SNMP-TRAPS, extensive LOG and TRACE options, PING and TRACEROUTE for checking connections, internal logging buffer for firewall events
Monitoring statistics	Extensive Ethernet, IP and DNS statistics; SYSLOG error counter, accounting information exportable via LANmonitor and SYSLOG, Layer 7 Application Detection including application-centric tracking of traffic volume
IPerf	IPerf is a tool for measurements of the bandwidth on IP networks (integrated client and server)
SLA-Monitor (ICMP)	Performance monitoring of connections
SD-LAN	SD-LAN – automatic LAN configuration via the LANCOM Management Cloud
SD-WAN	SD-WAN – automatic WAN configuration via the LANCOM Management Cloud
Hardware	
Weight	1,1 lbs (500 g)
Power supply	12 V DC, external power adapter (230 V) with bayonet cap to protect against accidentally unplugging

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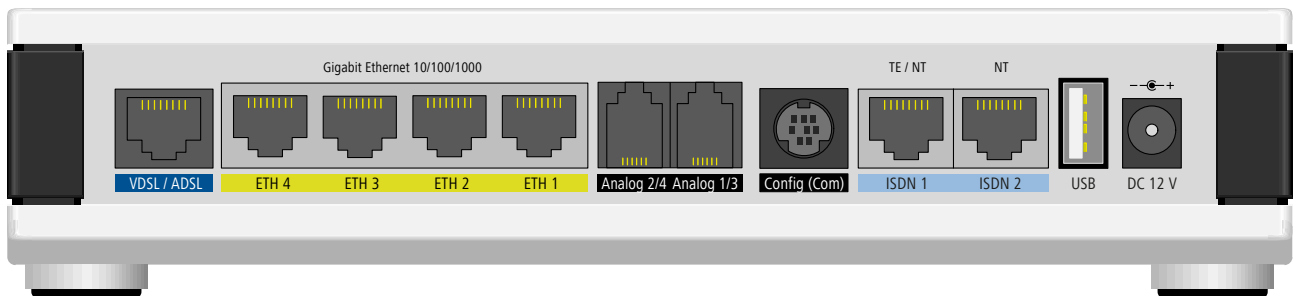
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Hardware	
Environment	Temperature range 0–35° C; humidity 0–95%; non-condensing
Housing	Robust synthetic housing, rear connectors, ready for wall mounting, Kensington lock; 210 x 45 x 140 mm (W x H x D)
Fans	None; fanless design without rotating parts, high MTBF
Power consumption (max)	15 watt
Declarations of conformity*	
CE	EN 60950-1, EN 55022, EN 55024
IPv6	IPv6 Ready Gold
Country of Origin	Made in Germany
*) Note	You will find all declarations of conformity in the products section of our website at www.lancom-systems.com
Scope of delivery	
Manual	Hardware Quick Reference (DE/EN), Installation Guide (DE/EN)
Cable	1 Ethernet cable, 3 m
Cable	ISDN cable, 3m
Cable	DSL cable for IP based communications incl. galvanic signature, 4,25m
Adapter	4x TAE adapter (RJ11 to TAE)
Adapter	2x RJ11 twin adapter
Power supply unit	External power adapter (230 V), NEST 12 V/2.0 A DC/S, coaxial power connector 2.1/5.5 mm bayonet, temperature range from -5 to +45° C, LANCOM item no. 111303 (EU)/LANCOM item no 110829 (UK)
Support	
Warranty	3 years support
Software updates	Regular free updates (LCOS operating system and LANtools) via Internet
Options	
VPN	LANCOM VPN-25 Option (25 channels), item no. 60083
LANCOM Content Filter	LANCOM Content Filter +10 user (additive up to 100), 1 year subscription, item no. 61590
LANCOM Content Filter	LANCOM Content Filter +25 user (additive up to 100), 1 year subscription, item no. 61591
LANCOM Content Filter	LANCOM Content Filter +100 user (additive up to 100), 1 year subscription, item no. 61592
LANCOM Content Filter	LANCOM Content Filter +10 user (additive up to 100), 3 year subscription, item no. 61593
LANCOM Content Filter	LANCOM Content Filter +25 user (additive up to 100), 3 year subscription, item no. 61594
LANCOM Content Filter	LANCOM Content Filter +100 user (additive up to 100), 3 year subscription, item no. 61595
LANCOM Warranty Basic Option S	Option to extend the manufacturer's warranty from 3 to 5 years, item no. 10710
LANCOM Warranty Advanced Option S	Option to extend the manufacturer's warranty from 3 to 5 years and replacement of a defective device, item no. 10715
LANCOM Public Spot	Hotspot option for LANCOM products, versatile access (via voucher, e-mail, SMS), including a comfortable setup wizard, secure separation of guest access and internal network, item no. 60642
LANCOM Public Spot PMS Accounting Plus	Extension of the LANCOM Public Spot (XL) Option for the connection to hotel billing systems with FIAS interface (such as Micros Fidelio) for authentication and billing of guest accesses for 178x/19xx routers, WLCs, and current central-site gateways, item no. 61638
LANCOM WLC Basic Option for Routers	LANCOM WLC Basic Option for Routers for up to 6 managed LANCOM access points or WLAN routers, item no. 61639
LANCOM WLC AP Upgrade +6	LANCOM WLC AP Upgrade +6 Option, enables your WLC to manage 6 Access Points/WLAN router in addition, item no. 61629
LANCOM VoIP +10 Option	Upgrade for LANCOM VoIP router with 10 additional internal VoIP numbers (additionally up to 40) and 10 external SIP lines (additionally up to 55) item no. 61423
LANCOM Management Cloud	
LANCOM LMC-B-1Y LMC License	LANCOM LMC-B-1Y License (1 Year), enables the management of one category B device for one year via the LANCOM Management Cloud, item no. 50103

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LANCOM Management Cloud	
LANCOM LMC-B-3Y LMC License	LANCOM LMC-B-3Y License (3 Years), enables the management of one category B device for three years via the LANCOM Management Cloud, item no. 50104
LANCOM LMC-B-5Y LMC License	LANCOM LMC-B-5Y License (5 Years), enables the management of one category B device for five years via the LANCOM Management Cloud, item no. 50105
Accessories	
LANCOM DECT 510 IP (EU)	Professional DECT base station for up to 6 DECT phones, network integration and configuration via LANCOM VoIP router, 4 simultaneous calls possible, highest voice quality, power supply via PoE or power supply unit, item no. 61901
19" Rack Mount	19" rack mount adaptor, item no. 61501
LANCOM Wall Mount	For simple, theft-proof mounting of LANCOM devices with plastic housings, item no. 61349
LANCOM Wall Mount (White)	For simple, theft-proof mounting of LANCOM devices with plastic housings, item no. 61345
LANCOM Serial Adapter Kit	For the connection of V.24 modems with AT command set and serial interface for the connection to the LANCOM COM interface, incl. serial cable and connection plug, item no. 61500
VPN Client Software	LANCOM Advanced VPN Client for Windows 7, Windows 8, Windows 8.1, Windows 10, single license, item no. 61600
VPN Client Software	LANCOM Advanced VPN Client for Windows 7, Windows 8, Windows 8.1, Windows 10, 10 licenses, item no. 61601
VPN Client Software	LANCOM Advanced VPN Client for Windows 7, Windows 8, Windows 8.1, Windows 10, 25 licenses, item no. 61602
VPN Client Software	LANCOM Advanced VPN Client for Mac OS X (10.5 Intel only, 10.6 or higher), single license, item no. 61606
VPN Client Software	LANCOM Advanced VPN Client for Mac OS X (10.5 Intel only, 10.6 or higher), 10 licenses, item no. 61607
Item number(s)	
LANCOM 1793VA (EU)	62114



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LANCOM Rack Mount

Mounting bracket for LANCOM devices with indoor housings in a 19" rack

LANCOM devices in CPE housings, including routers or access points, fit seamlessly into professional 19" cabinets with the LANCOM Rack Mount. The device takes up just a single height unit in the cabinet and the device, cables, and power supply are neatly concealed.

- › Rack-mounting bracket for easy mounting of LANCOM devices with the indoor housing
- › Occupies one height unit in the server rack
- › Sturdy metal housing with black powder coating
- › Dimensions: 48.3 cm x 4.4 cm x 16.0 cm (WxHxD)

LANCOM Rack Mount

Scope of delivery

Mounting Kit	Robust metal rack for mounting LANCOM devices, metal ceiling panel, plastic bolt for mounting ceiling panel, screws and ring washers for mounting the rack, assembly instruction
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Fit for the following LANCOM devices

Indoor	All LANCOM routers, WLAN controllers, and access points in a CPE housing. If the permitted ambient temperature of the devices is exceeded, an active cooling or an open mounting is recommended.
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Item number(s)

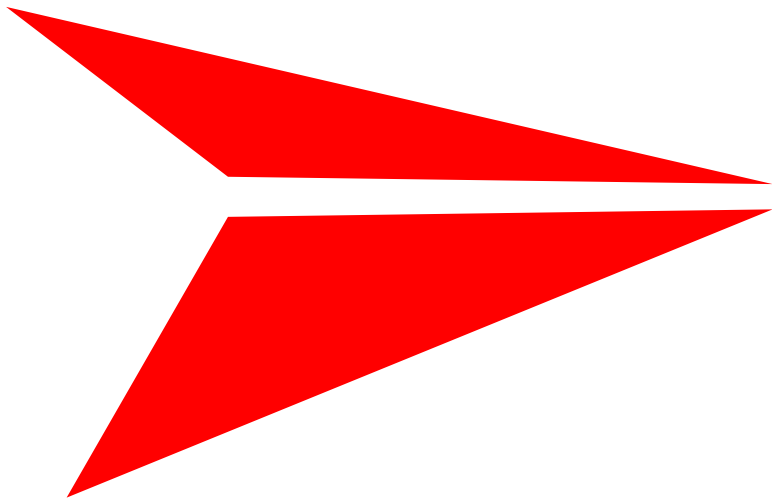
LANCOM Rack Mount	LS61501
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Overview of innovaphone analogue adapters

	IP22	IP29-4	IP29	IP29 Bundle
				
Interfaces	2 x a/b FXS (RJ11, Modular Jack 6P2C)	4 x a/b FXS (RJ11, Modular Jack 6P2C)	8 x a/b FXS (RJ11, Modular Jack 6P2C)	16 x a/b FXS (RJ11, Modular Jack 6P2C)
Voice channels	2	4	8	16
Looping in	No	No	No	No
PBX support*	No	No	No	No
Compact flash and flash disk support	16 Mbyte Flash	32 Mbyte Flash	32 Mbyte Flash	2 x 32 Mbyte Flash
Linux Application Platform	No	No	No	No
Conference Unit	No	No	No	No
Ethernet switch	1 x Ethernet RJ45 (Modular Jack 8P8C) 10/100 Base-TX (Auto negotiation) "Power over Ethernet" according to IEEE 802.3af, Class 3	1 x Ethernet RJ45 (Modular Jack 8P8C) 10/100 Base-TX (Auto negotiation) "Power over Ethernet" according to IEEE 802.3af, Class 3 Energy Efficient according to IEEE 802.3az	1 x Ethernet RJ45 (Modular Jack 8P8C) 10/100 Base-TX (Auto negotiation) "Power over Ethernet" according to IEEE 802.3af, Class 3 Energy Efficient according to IEEE 802.3az	2 x Ethernet RJ45 (Modular Jack 8P8C) 10/100 Base-TX (Auto negotiation) "Power over Ethernet" according to IEEE 802.3af, Class 3 Energy Efficient according to IEEE 802.3az
External power supply	"Power over Ethernet" according to IEEE 802.3af, Class 3 or mains adapter	"Power over Ethernet" according to IEEE 802.3af, Class 3	"Power over Ethernet" according to IEEE 802.3af, Class 3	"Power over Ethernet" according to IEEE 802.3af, Class 3
Codecs	G.711 A-law / μ -law (64 kbps) G.729 A VAD, CNG Dynamic Jitter Buffering Echo Compensation: G.168 Data modem support	G.711 A-law / μ -law (64 kbps) G.722 G.723.1 G.729 A VAD, CNG Dynamic Jitter Buffering Echo Compensation: G.168 Data modem support Opus	G.711 A-law / μ -law (64 kbps) G.722 G.723.1 G.729 A VAD, CNG Dynamic Jitter Buffering Echo Compensation: G.168 Data modem support Opus	G.711 A-law / μ -law (64 kbps) G.722 G.723.1 G.729 A VAD, CNG Dynamic Jitter Buffering Echo Compensation: G.168 Data modem support Opus
Protocols	H.323 & SIP Multi protocol T.38	H.323 & SIP Multi protocol T.38	H.323 & SIP Multi protocol T.38	H.323 & SIP Multi protocol T.38
Order number	01-00022-001	01-00029-004	01-00029-001	88-00010-056

* The innovaphone PBX has 100% the same functionality and features on all supported devices. The configuration interface on all boxes is <http://>

www.catena.no



*RV15 Brunsviktunnelen
E39 Økslandtunnelen
Fv773 Steinfjelltunnelen
Fv60 Ljøttunnelen
Rv150 Tåsentunnelen
Rv150 Rælingstunnelen
E18 Fosskoll tunnelen
E18 Larvikstunnelen
E18 Martineåstunnelen
E6 Follotunnelen
Rv159 Rælingstunnelen
Vidareidistunnelin (Færøyene)
E8 Tromsøysundtunnelen
E6 Finneidfjordtunnelen
E6 Nordmarkstunnelen
E6 Nettet Tunnelen
E6 Korgfjelltunnelen
E39 Bømlafjordtunnelen
E16 Fretheim – Onstad
E6 Kvænflogtunnelen
E6 Saksenviktunnelen
E39 Moa – Blindheim
E136 Innfjordtunnelen
E136 Måndalstunnelen
Oslotunnelene (DAB)
E134 Kongsbergtunnelen
E134 Svartåstunnelen
Rv658 Ellingsøytunnelen
Rv658 Valderøytunnelen
Rv658 Godøytunnelen
E18 Torsbuåstunnelen
E18 Hesthagtunnelen
E6 Ailegastunnelen
E6 Larsbergstunnelen
E6 Skardalstunnelen
E6 Isfjelltunnelen
E6 Tømmernestunnelen
Rv94 Stallogargotunnelen
Fv867 Kvernsundtunnelen
E69 Honningsvågtunnelen
E69 Nordkapptunnelen*