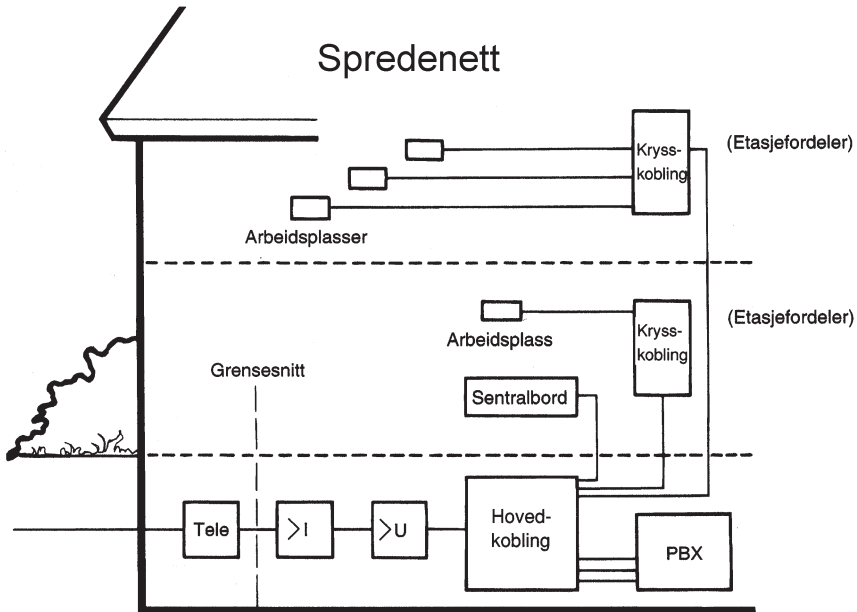


# Illustrasjoner til Kommunikasjonsanlegg Vg2 elenergi

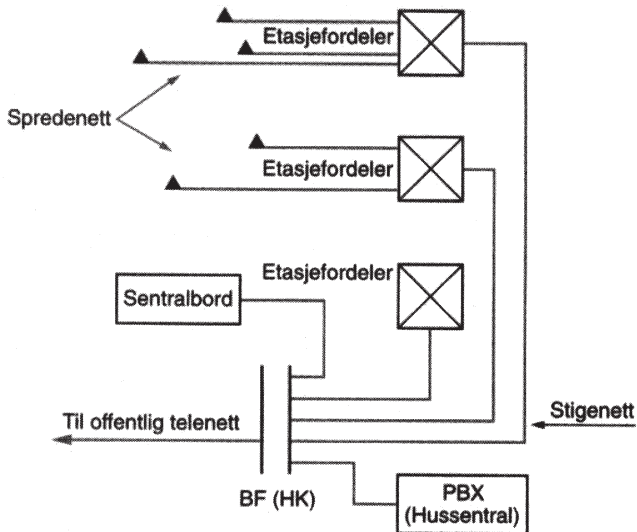
## Kapittel 6

Illustrasjonene kan brukes fritt i undervisningen

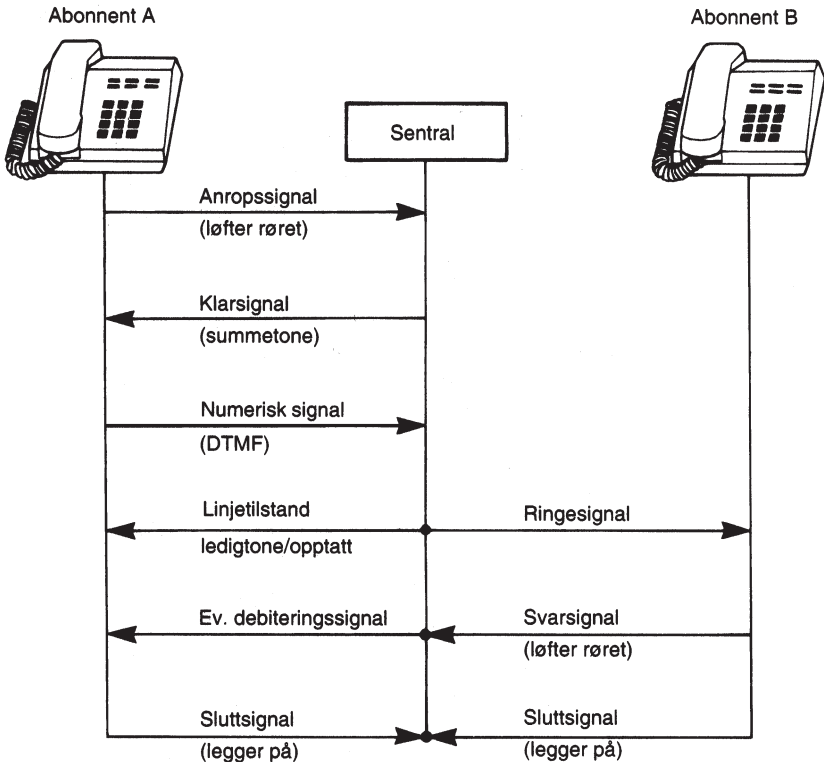
© Elforlaget 2010



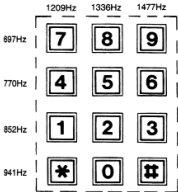
**Figur 6.1 Grensesnitt og bedriftsinternt nett**



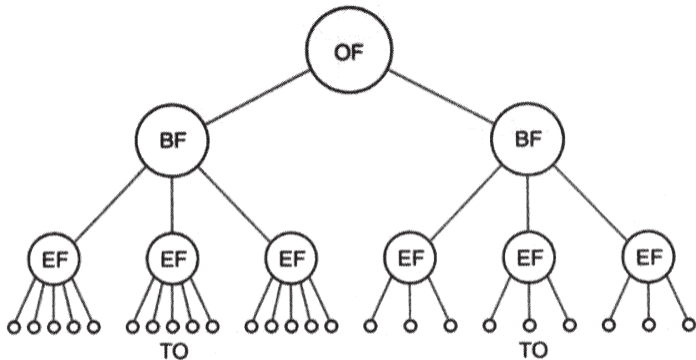
**Figur 6.2 Spredenettet i en bygning**



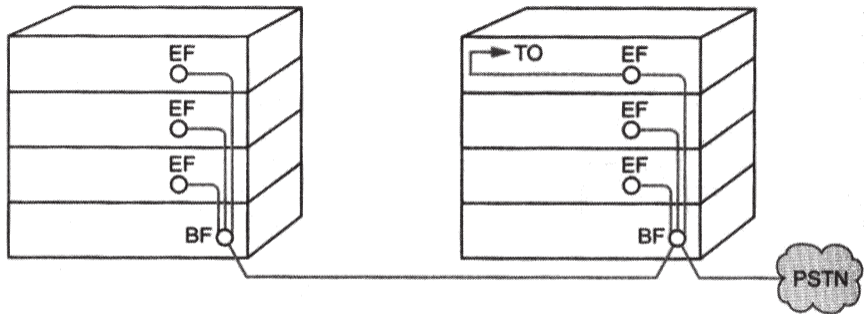
**Figur 6.3** Signalering i telenett, analog telefoni



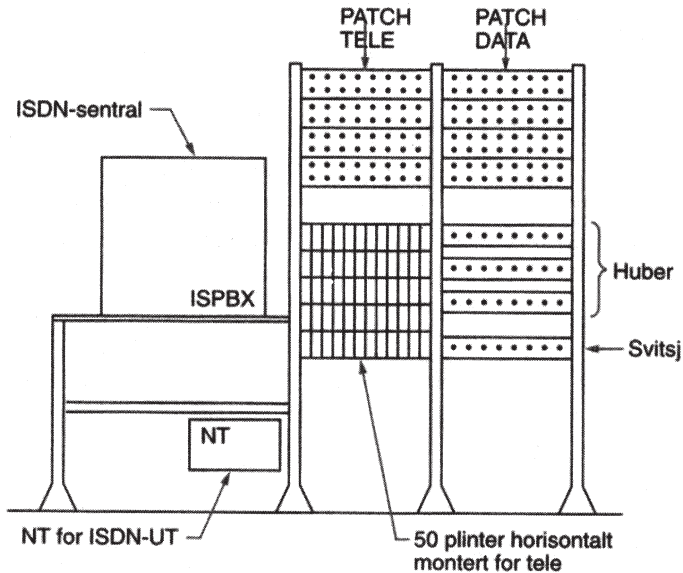
**Fig. 6.4 DTMF-signaler**



**Figur 6.5 Hierarkisk oppbygning**

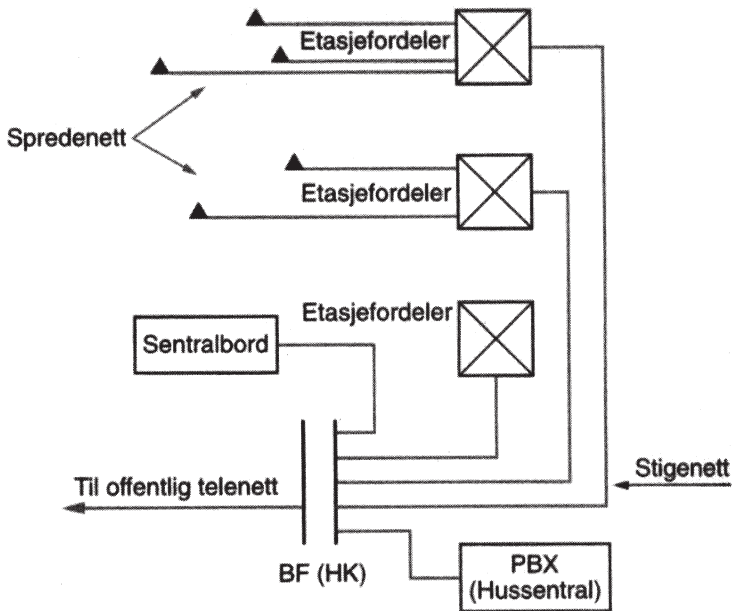


**Figur 6.6 Strukturert kabelnett**

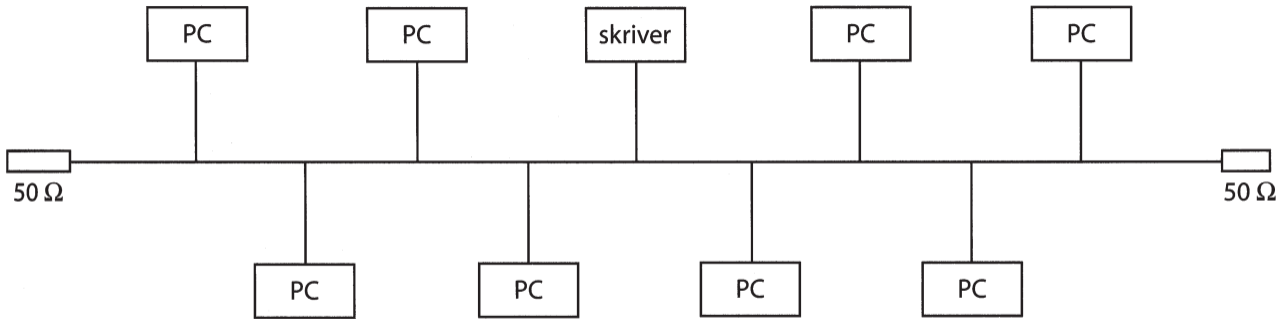


**Figur 6.7 Bygningsfordeler (BF)**

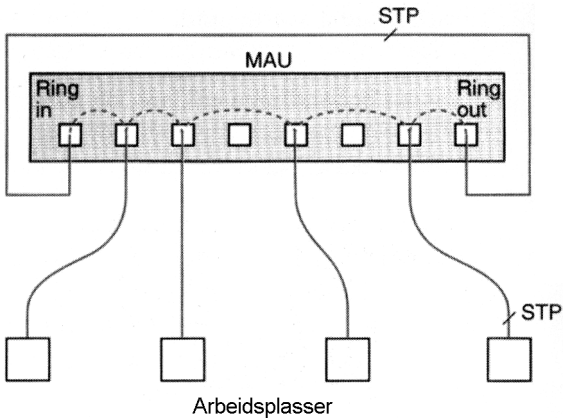




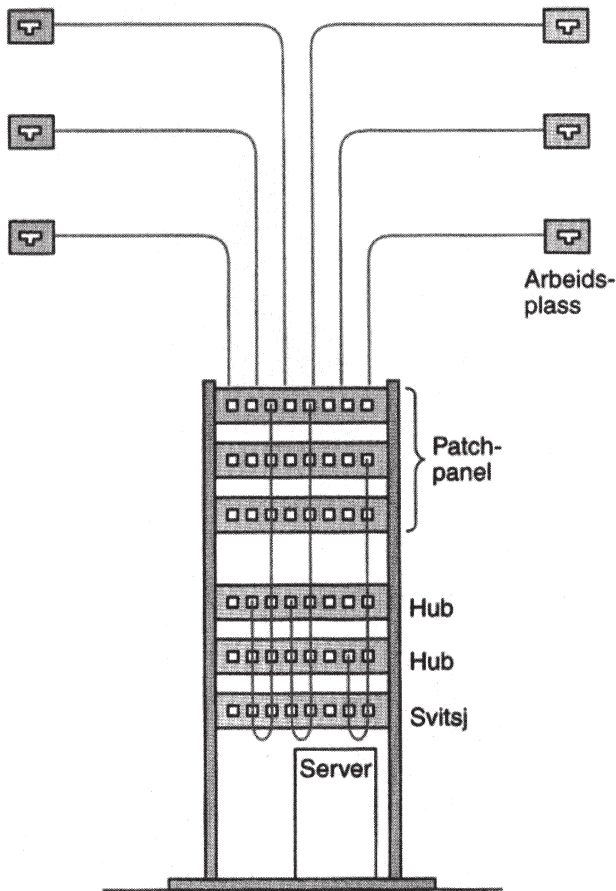
**Figur 6.8 Stigenett og spredenett**



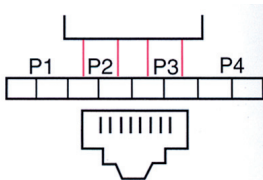
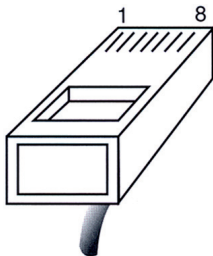
**Figur 6.9 Bussnett**



**Figur 6.10 Ringnett**

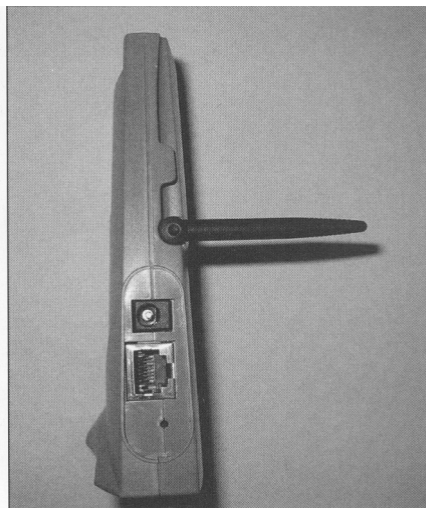
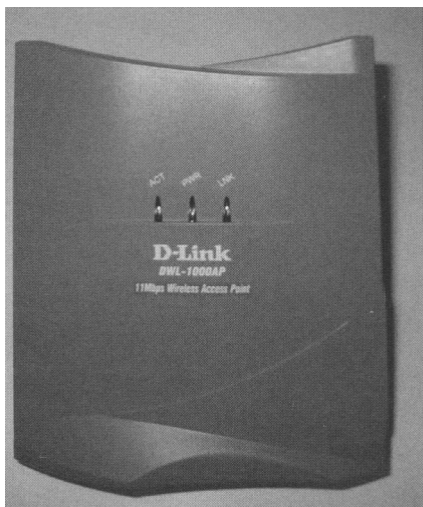


Figur 6.11 100BaseT strukturert kabling

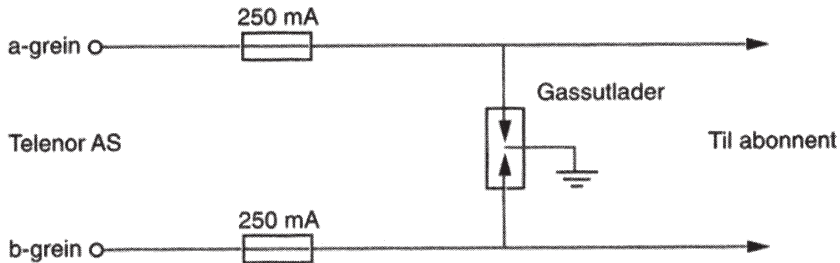


Pinne 1 og 2 (p2)  
Pinne 3 og 6 (p3)

**Figur 6.12** Anvendelse av par i Ethernet



**Figur 6.13 Basestasjon**



**Figur 6.14 Strømsikringer og overspenningsvern, prinsippkobling**

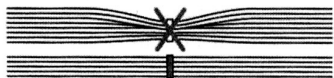
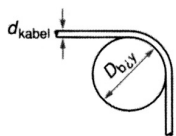
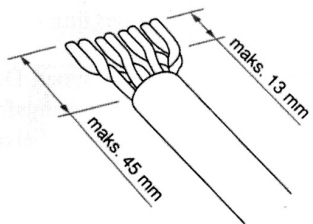


Fig. a



Fig. b

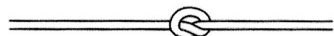
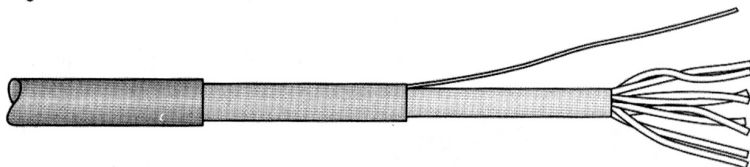


Fig. c



### Kabelforlegning i forhold til kraftkabler/støykilde:

Forlegning	Last (kW)	Anvendelse	Tiltak	Avstand (minimum)
Kabelbro Kanal	< 3,5	Kontor Fordelingsnett	Skillevegg	5 cm
Kabelbro	3,5 til 6,0	Ford./stiger	Skillevegg	12 cm
Kabelbro	> 6,0	Stiger		60 cm
Parallell med lysrør eller tilsvarende støykilde	< 3,5	Ford./stiger		25 cm

### Maksimal trekraft:

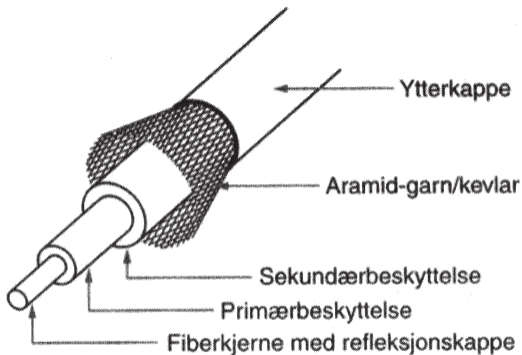
	Fig. a	Fig. b
1 x 4 par:	50 N (5 kg)	100 N (10 kg)
2 x 4 par:	75 N	150 N
3 x 4 par:	100 N	200 N
X x 4 par:	X x 25 + 25 N	X x 50 + 50 N
Maksimal trekraft uansett antall par:	200 N	400 N

Figur 6.15 Cat5-kabel





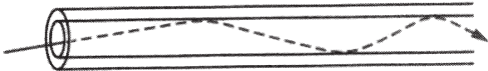
**Figur 6.16 Koaksialkabel**



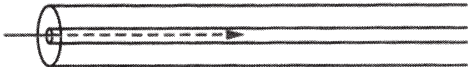
**Figur 6.17 Hvordan fiberen kan være oppbygd**



**Figur 6.18 Multimodus trinnindeks**



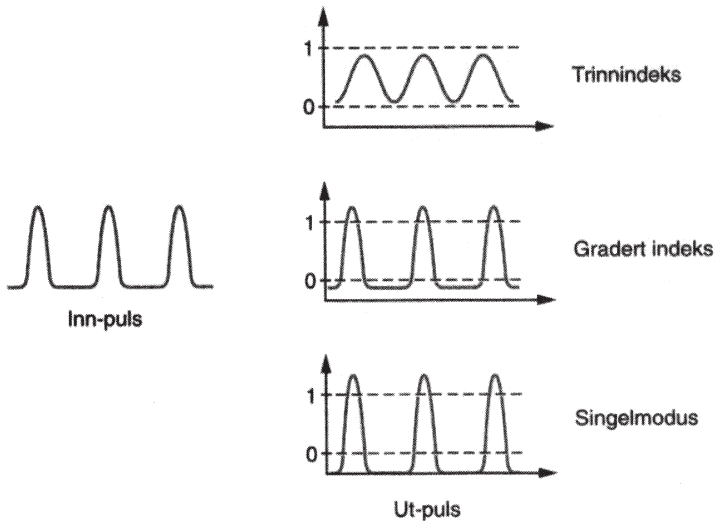
**Figur 6.19 Multimodus gradert indeks**



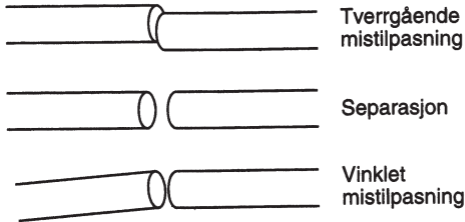
**Figur 6.20 Singelmodus**



**Figur 6.21 ST- og SC-konnektorer**



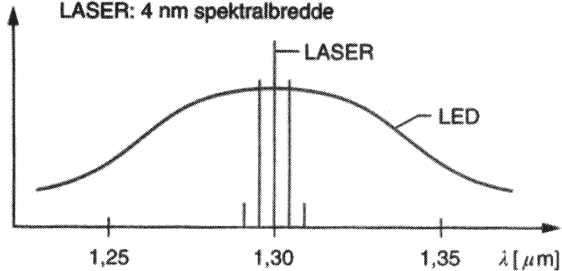
**Figur 6.22** Dispensjon i de tre fibertypene



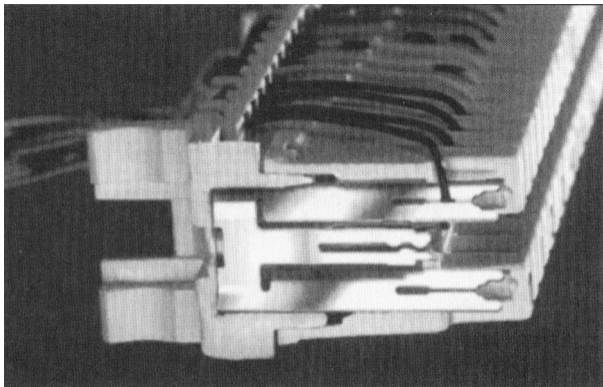
**Figur 6.23 Mistilpasning ved skjøting av fiber**



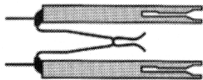
LED: 80 nm spektralbredde  
LASER: 4 nm spektralbredde



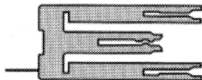
**Figur 6.24 Spektralbredden for LED og laser**



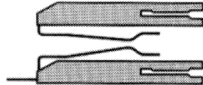
**Figur 6.25 Gjennomskåret Krone-plint**



Bryteplint

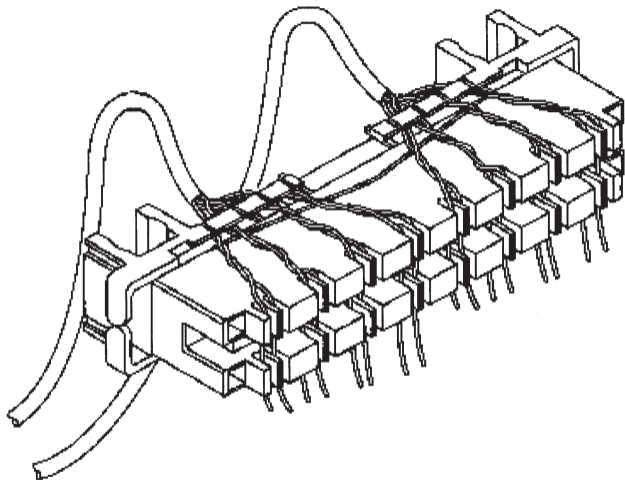


Koblingsplint

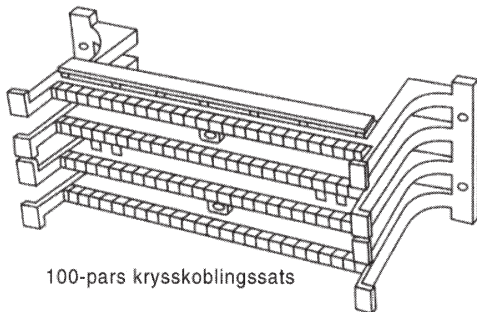


Skilleplint

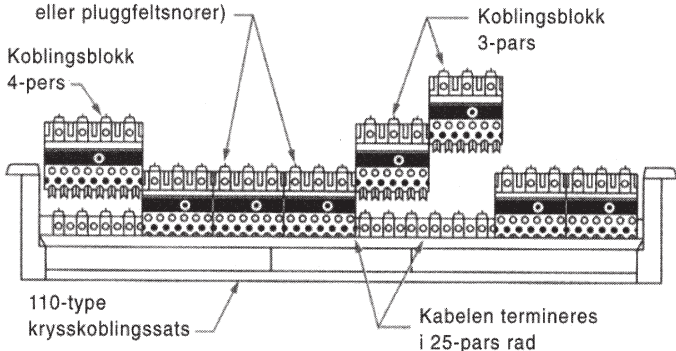
**Figur 6.26 Oppbygning av de ulike plinttypene fra Krone**



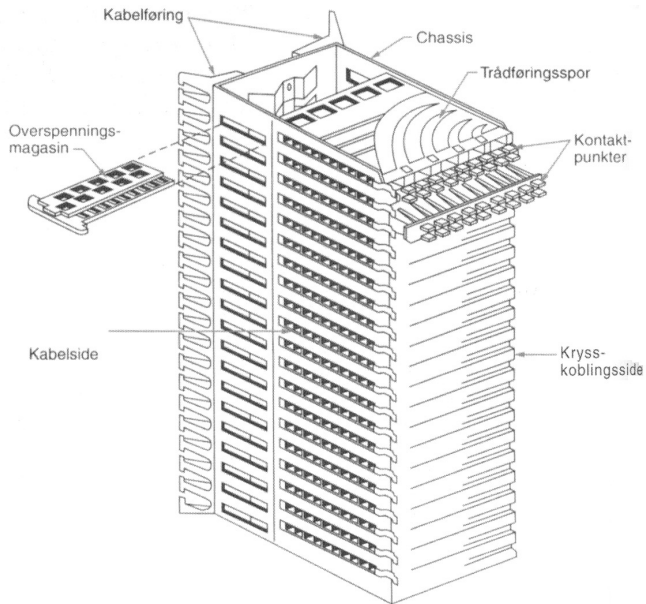
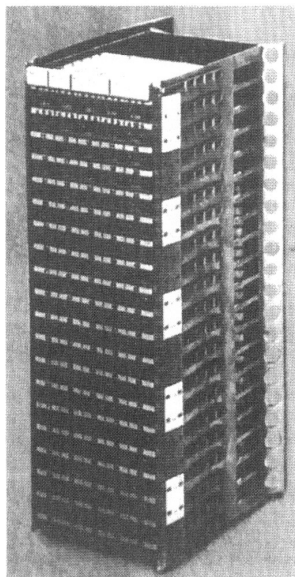
**Figur 6.27 Cat5-plint**



Termineringspunkt  
for krysskoblinger  
(krysskoblingstråd  
eller pluggfeltstnorer)



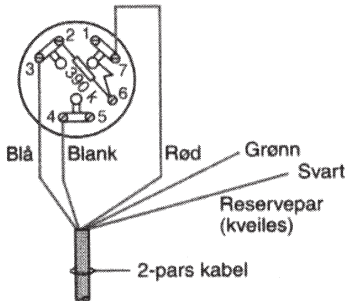
**Figur 6.28 Systemax 110-blokk**



**Figur 6.29 Trennlist fra Krone**

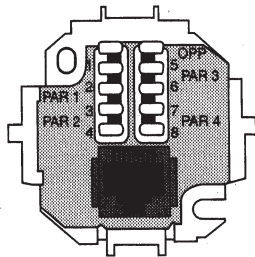
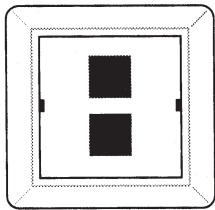
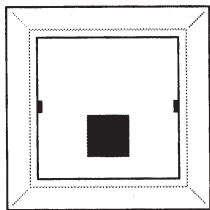


**Figur 6.30 Patchepanel**

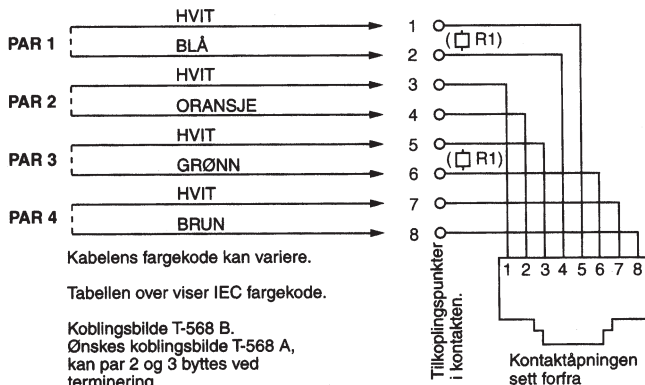


**Figur 6.31 Trepolt kontakt**



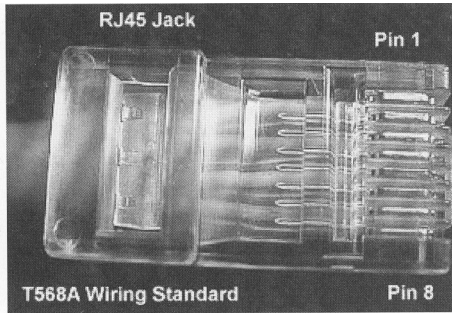
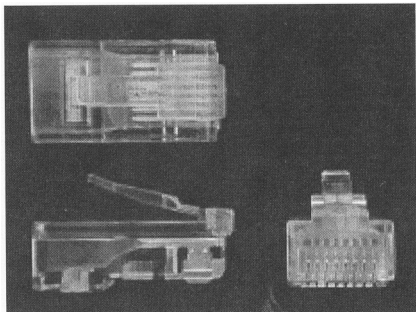


## Koblingsbilde for ELKO 8-pins modularkontakt



**NB!** LEGG MERKE TIL KRYSSKOPLINGEN FRA TERMINERINGS-PUNKTENE TIL PINNENE I KONTAKTEN.

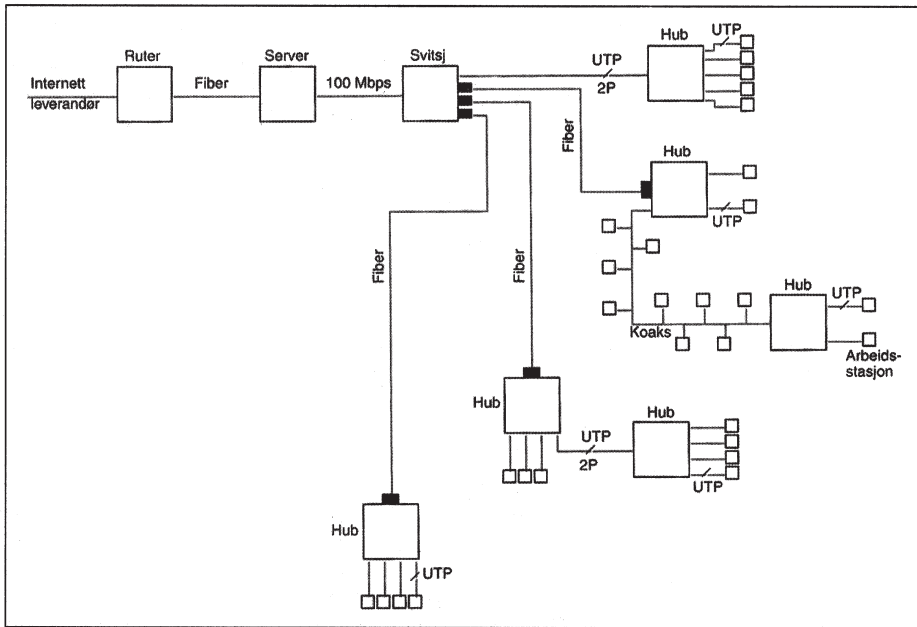
Figur 6.32 ISO 8-kontakt



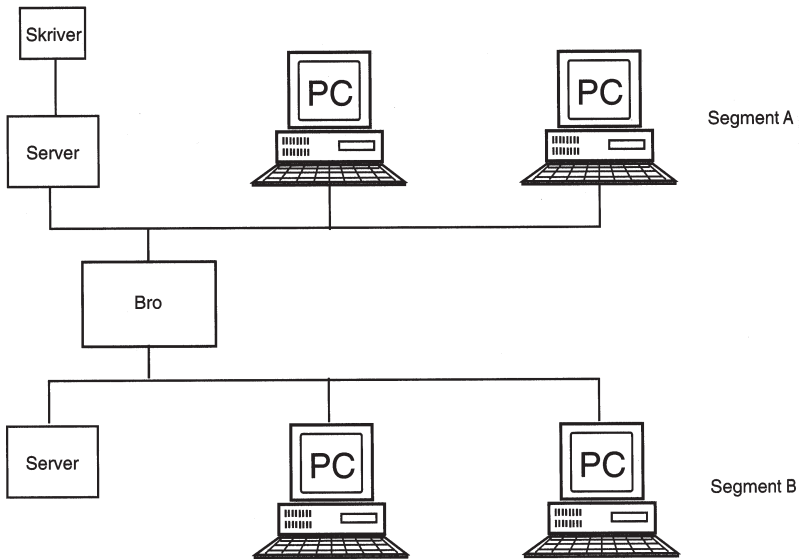
**Figur 6.33 RJ45-plugg**



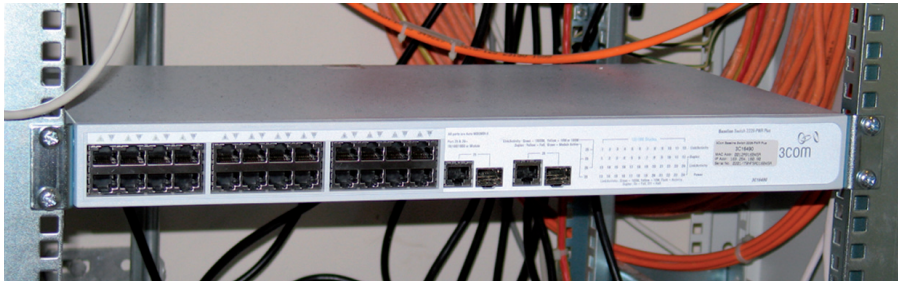
**Figur 6.34 Repeater**



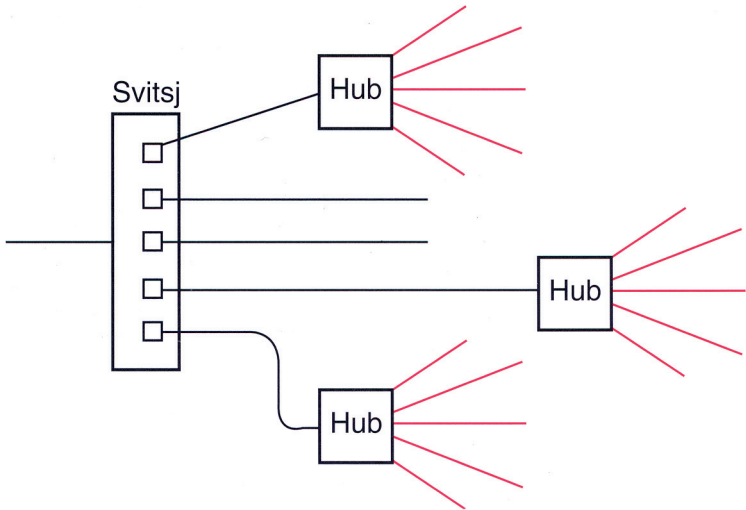
**Figur 6.35** Eksempler på bruk av hub



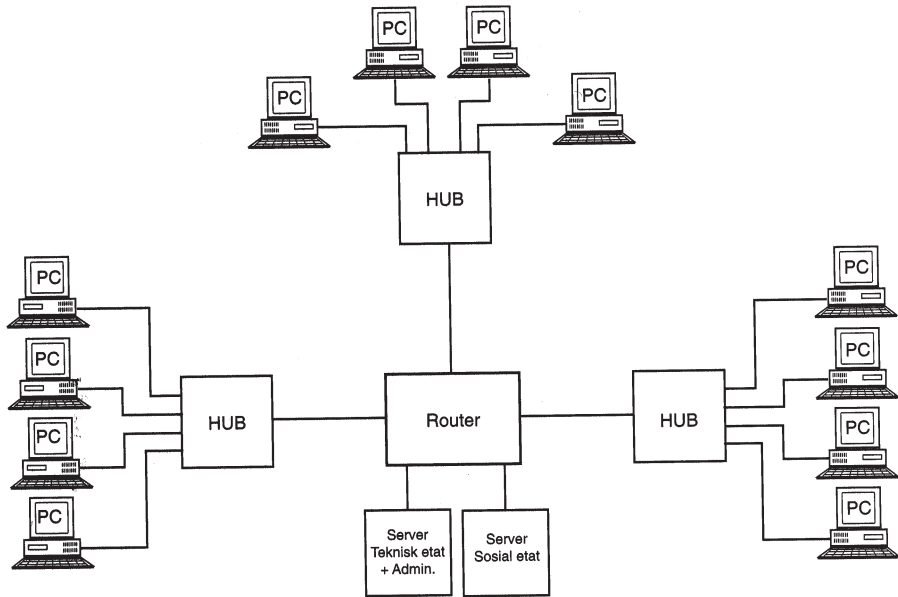
**Figur 6.36** Bruk av bro



**Figur 6.37 Svitsj**

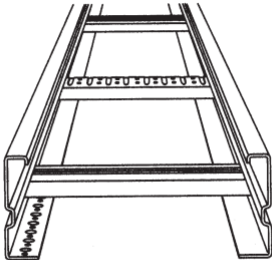


**Figur 6.38 Svitsjet nettverk**

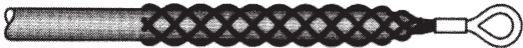


**Figur 6.39** Bruk av ruter

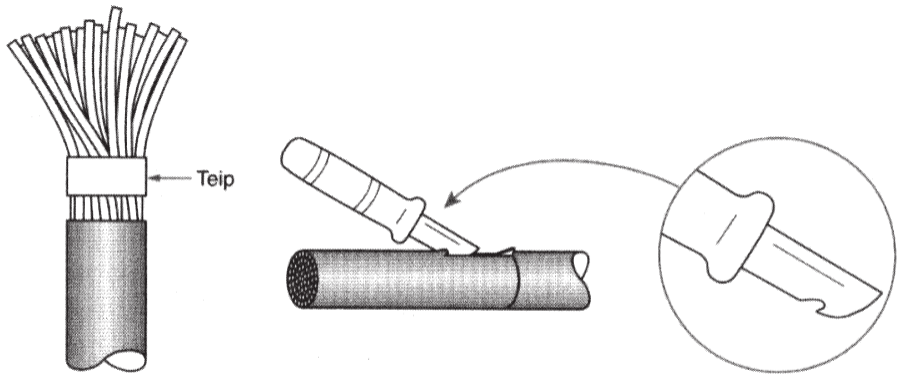




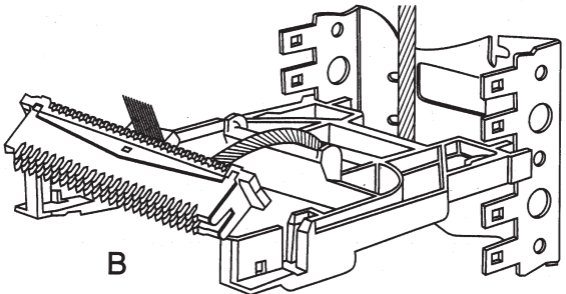
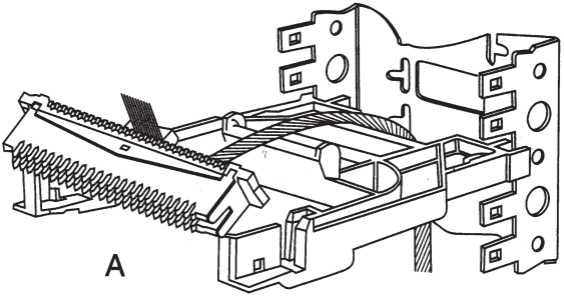
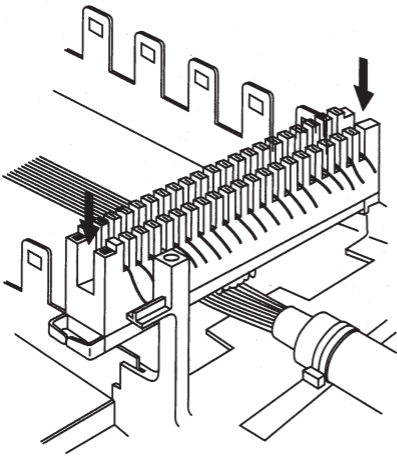
**Figur 6.40 Kabelstige**



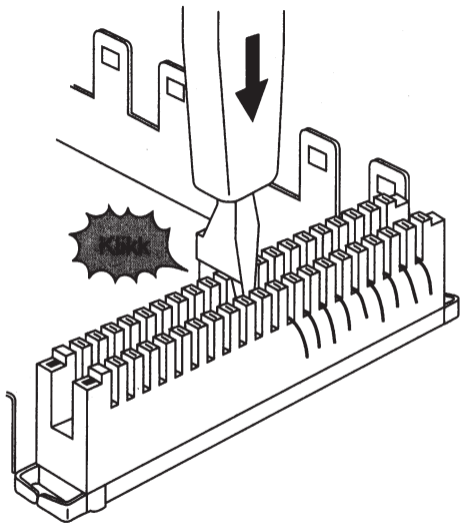
**Figur 6.41 Trekkstrømpe**



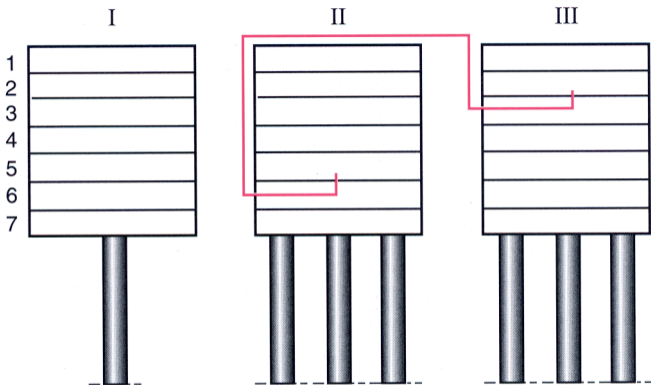
**Figur 6.42 Sikring av grupper**



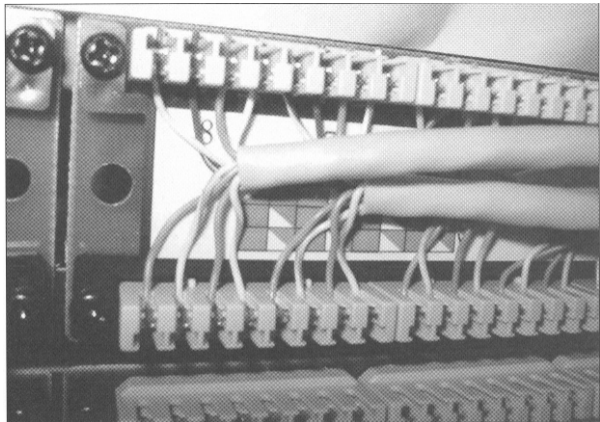
**Figur 6.43** Bruk av uttrigger



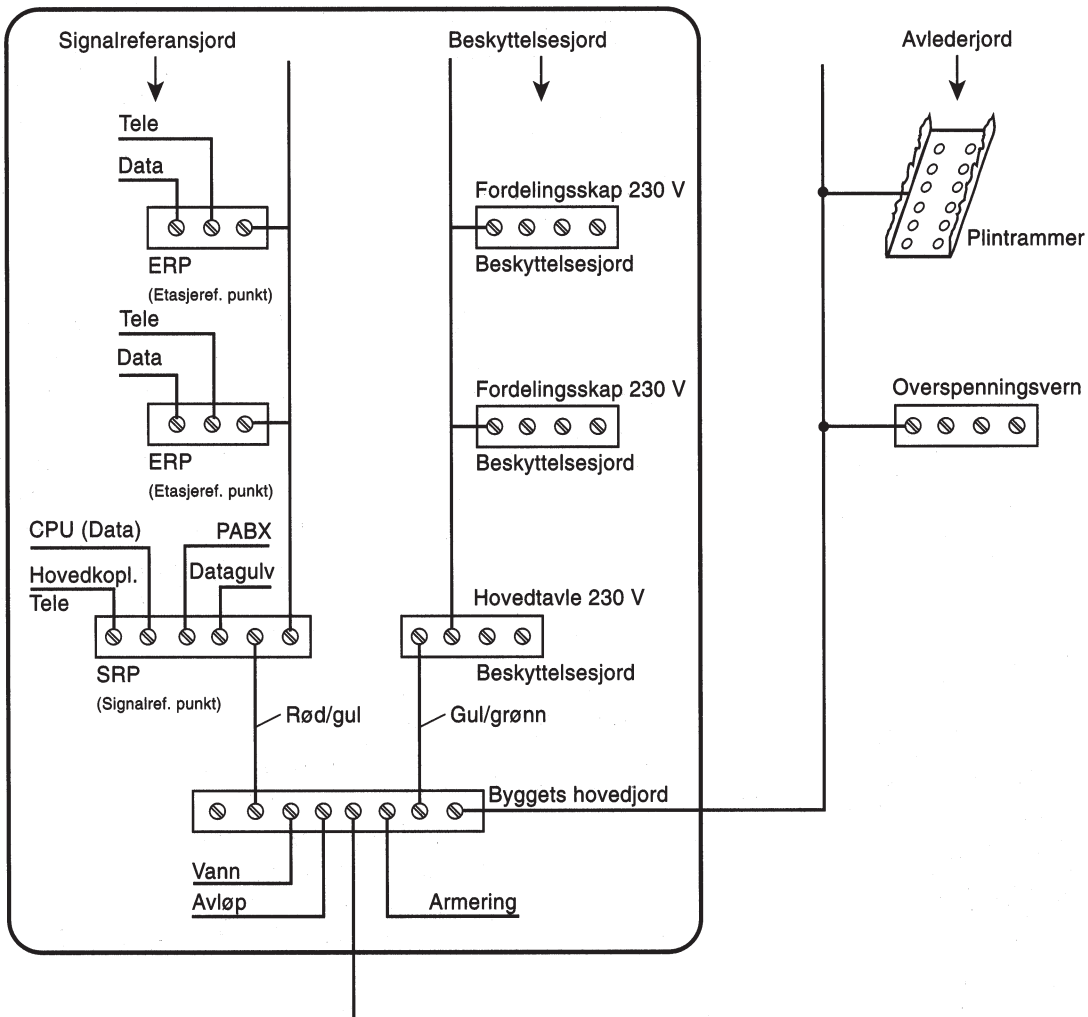
**Figur 6.44 Bruk av LSA-verktøy på plint**



**Figur 6.45 Krysskobling mellom plintrader**

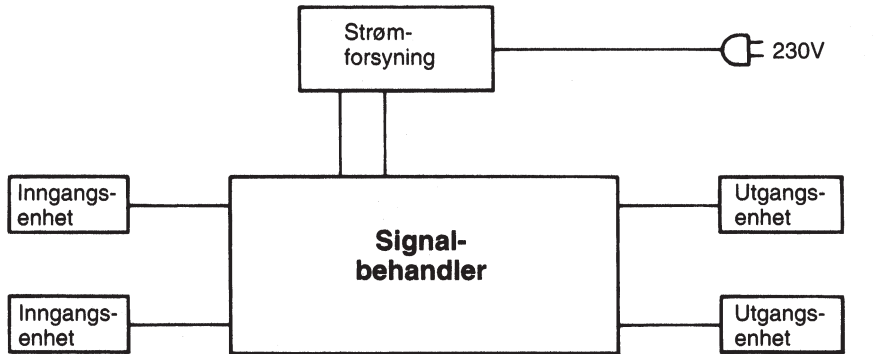


**Figur 6.46 Tilkoblinger på patchepanel**



Figur 6.47 Jordsystemene i et bygg

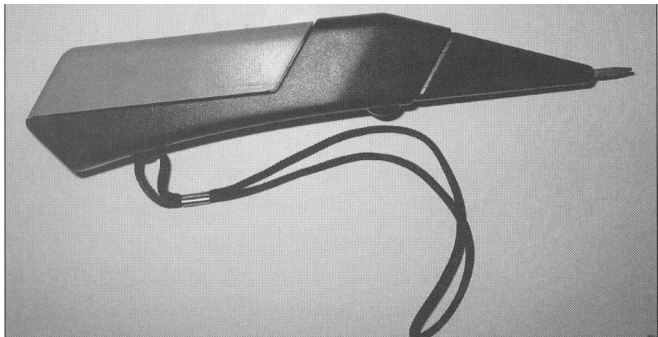




Signalomformere  
(følere, detektorer,  
givere, initiatorer)

Signalomformere

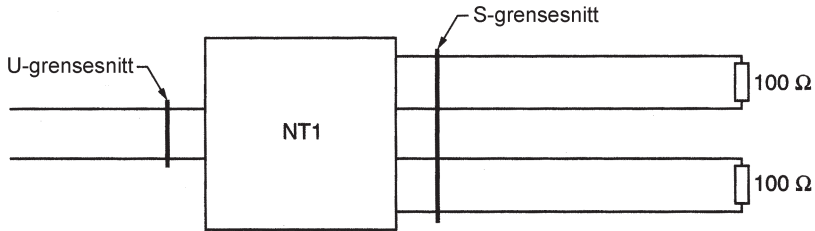
**Figur 6.48** Blokkskjema for et elektronisk system



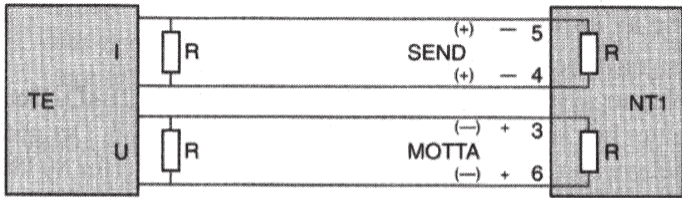
**Figur 6.49 Parsøker**



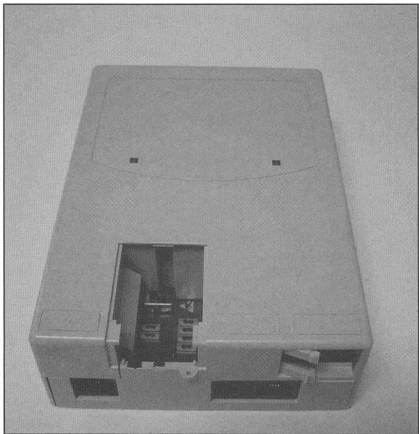
**Figur 6.50 Pulsekkometer**



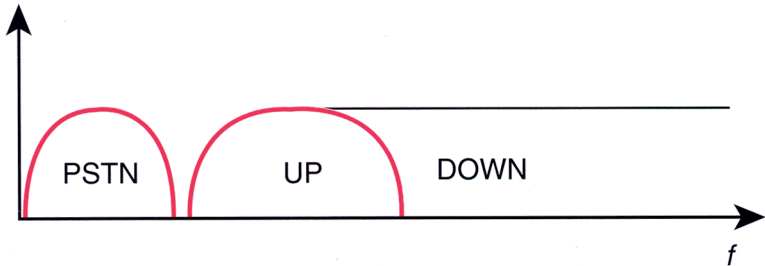
**Figur 6.51 ISDN-nett**



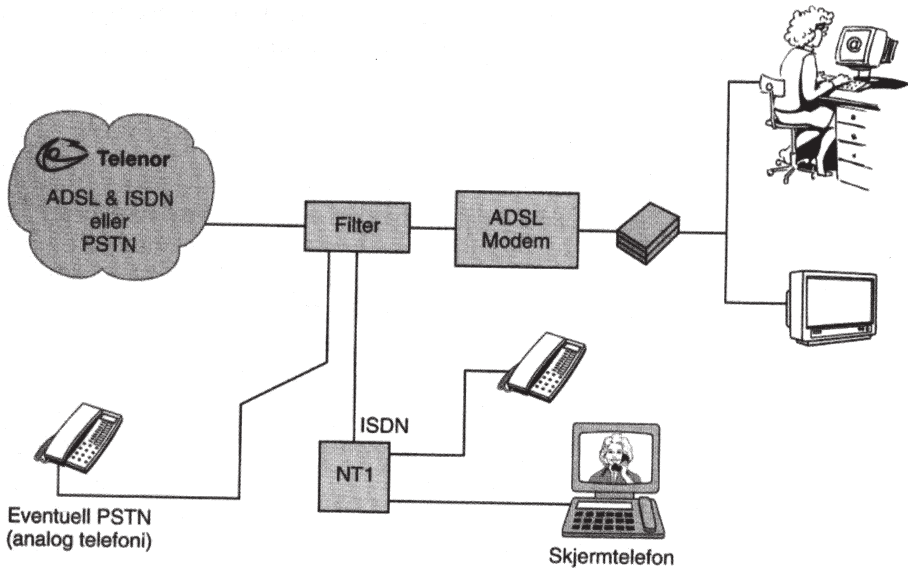
**Figur 6.52** Strømtilførsel til brukergrensesnittet



**Figur 6.53** Tilkoblinger i en NT1

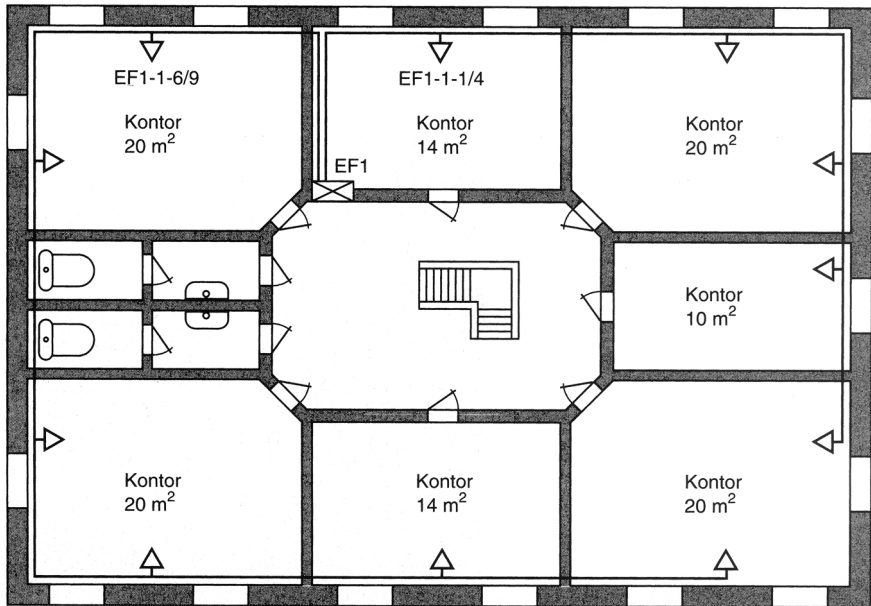


**Figur 6.54 Båndbreddeoppdeling for ADSL**

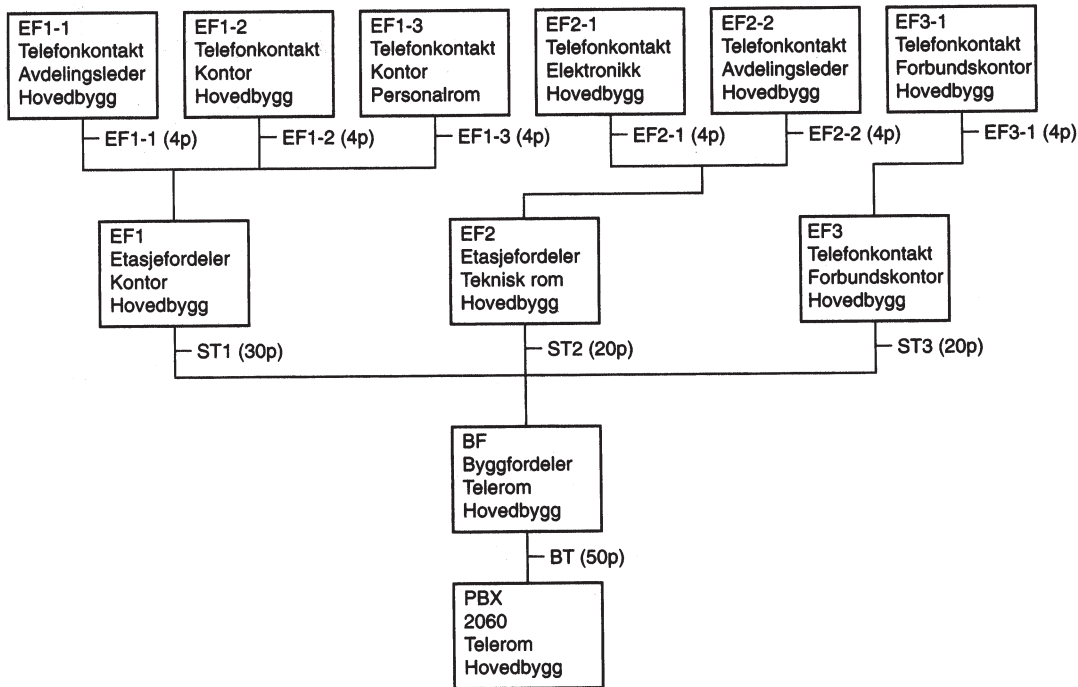


**Figur 6.55 ADSL**





**Figur 6.56** Plantegning



**Figur 6.57** Blokkskjema (kilde: Telemator)

### Kabler i nett

Kabel	Type	Ende A	Ende B	Antall par	Lengde	Ruting	FEIL	Merknad
BT	INNE	PBX	BF	50p	10	RUTING	-	-
EF1-1	INNE	EF1	EF1-1	4p	20	RUTING	-	-
EF1-2	INNE	EF1	EF1-2	4p	20	RUTING	-	-
EF1-3	INNE	EF1	EF1-3	4p	20	RUTING	-	-
EF2-1	INNE	EF2	EF2-1	4p	20	RUTING	-	-
EF2-2	INNE	EF2	EF2-2	4p	20	RUTING	-	-
EF3-1	INNE	EF2	EF3-1	4p	20	RUTING	-	-
ST1	JORD	BF	EF1	30p	500	RUTING	-	-
ST2	JORD	BF	EF2	30p	200	RUTING	-	-
ST3	JORD	BF	EF3	30p	50	RUTING	-	-

Total kabellengde: 880 m

Type: Antall:  
 INNE 7  
 JORD 3

### Punkt katalog

Punkt	Type	Tegning	Materiell	Kart	Merknad
BF	BYGGFORDELER T	-	A6	-	-
EF-1	ETASJEFORDELER	-	KRONECTION II	-	-
EF1-1	TELEFONKONTAKT	-	ISO-8 DOBBEL	-	-
EF1-2	TELEFONKONTAKT	-	ISO-8 DOBBEL	-	-
EF1-3	TELEFONKONTAKT	-	ISO-8 DOBBEL	-	-
EF2	ETASJEFORDELER	-	KRONECTION II	-	-
EF2-1	TELEFONKONTAKT	-	ISO-8 DOBBEL	-	-
EF2-2	TELEFONKONTAKT	-	ISO-8 DOBBEL	-	-
EF3	ETASJEFORDELER	-	KRONECTION II	-	-
EF3-1	TELEFONKONTAKT	-	ISO-8 DOBBEL	-	-

### Linjekort

Linje	10004	Bestilt dato	12.04.1999
Linjetype	TLF	Oppkoples	-
Linjeref.	-	Kopling utført	-
Kategori	KONTOR	Nedkoples dato	-
Antall tråder	2		
Merknader	-		

#### LINJEENDE

Telefon/IP-adr: 8024      Punkt...      Type...  
 Adresse..... -

#### KABELTRASÉ FOR RUTINGEN AV TRÅD 'A'

Start	Fra Ende	Til Ende	Kabel	Ant. kabler Fra start:	Ant. sammenkopl. Par til ende:
	PBX	BF	BF	1	2
	BF	EF2	ST2	2	2
	EF2	EF2-2	EF2-2	3	1

#### RUTINGEN AV LINJEN

Utstyr. PBX      Type 2060      S.nr. 12345      Tegn-  
 Adresse. TELEROM HOVEDBYGG  
 Merknad-

Kabel	Leder:	Tråd:	Kort/Utg.
BT	5a	A	02/1
BT	5b	B	02/1

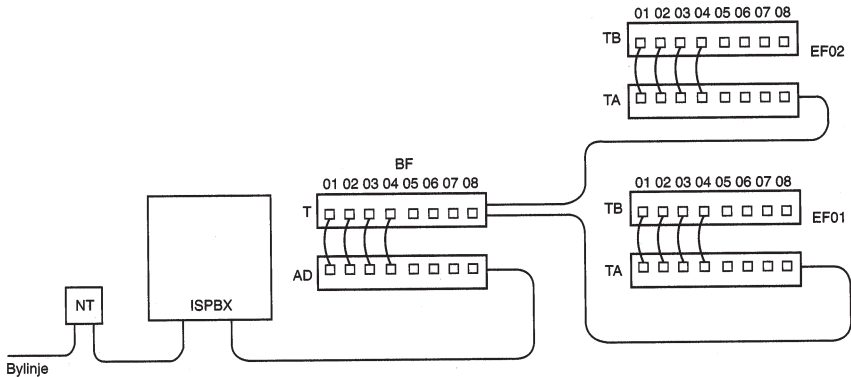
Punkt.....BF      Type BYGGFORDELER T      Kart-      Tegn-  
 Adresse. TELEROM HOVEDBYGG  
 Merknad-

Kabel	Leder:	Tråd:	Kryss nr:	Rad/plint/par	Term Type
BT	5ab	AB	-	1/1/5ab	BRYTE 2/10
ST2	2ab	AB	-	./.	-

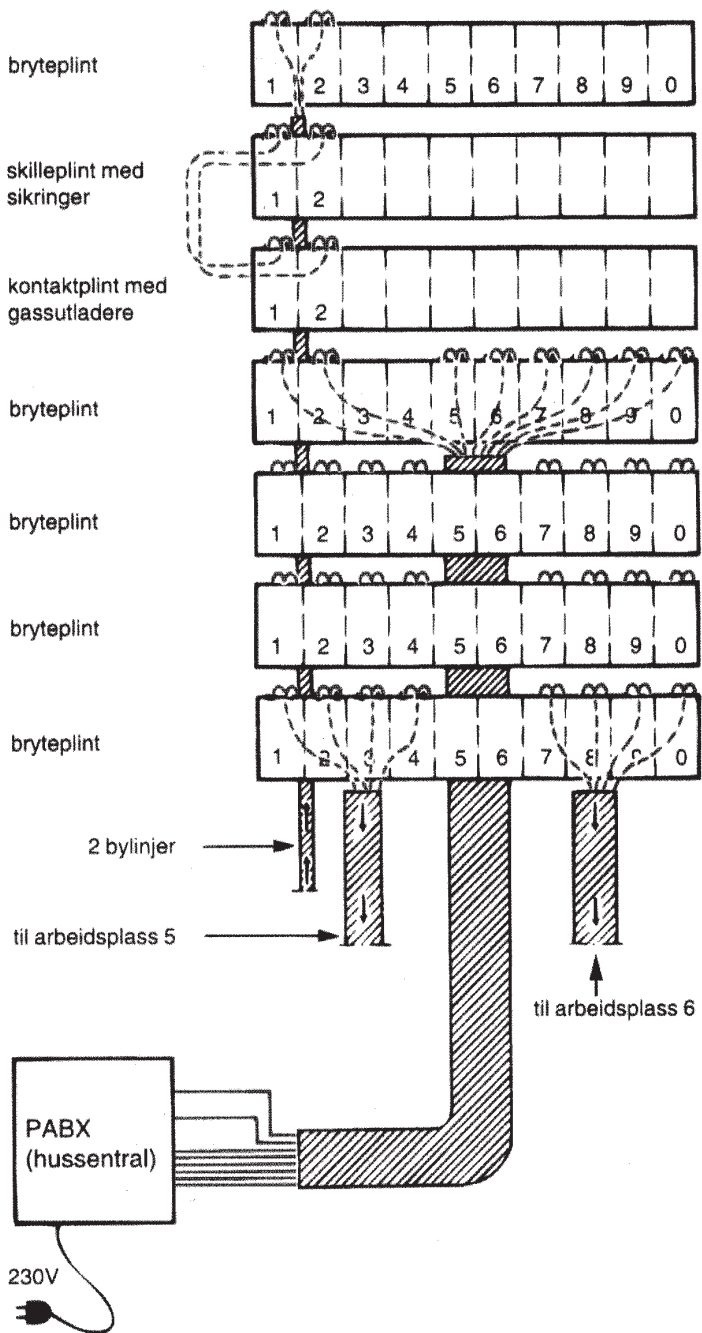
Punkt.....EF2      Type ETASJEFORDELER      Kart-      Tegn-  
 Adresse. TEKNISK ROM HOVEDBYGG  
 Merknad-

Kabel	Leder:	Tråd:	Kryss nr:	Rad/plint/par	Term Type
ST2	2ab	AB	-	1/1/2ab	BRYTE 2/10
EF2-2	1ab	AB	-	./.	-

Figur 6.58 Anleggsdokumentasjon for et telenett (kilde: Telemator)



**Figur 6.59** Blokkskjema over nettet (spredenettet fra EF-ene er ikke tegnet)



**Figur 6.60 Hovedkoblingen**