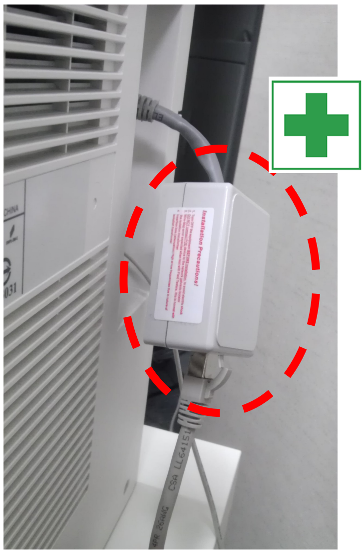
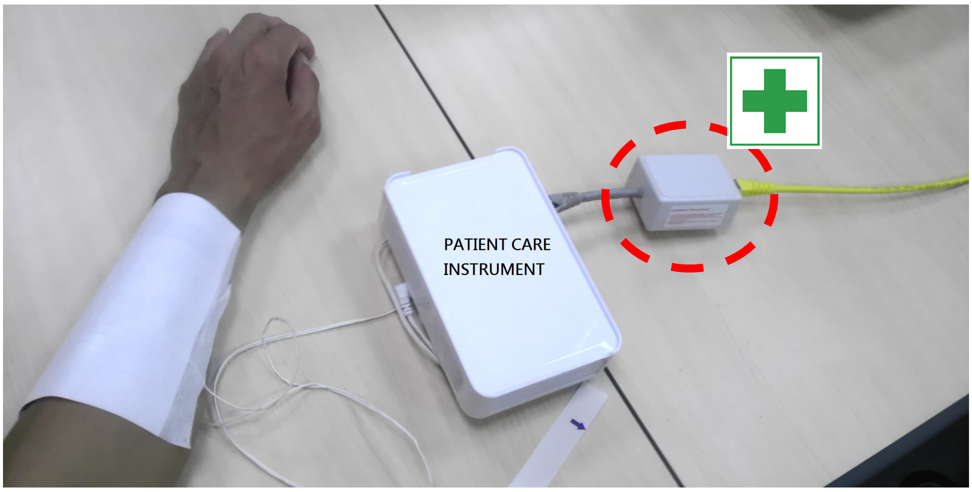
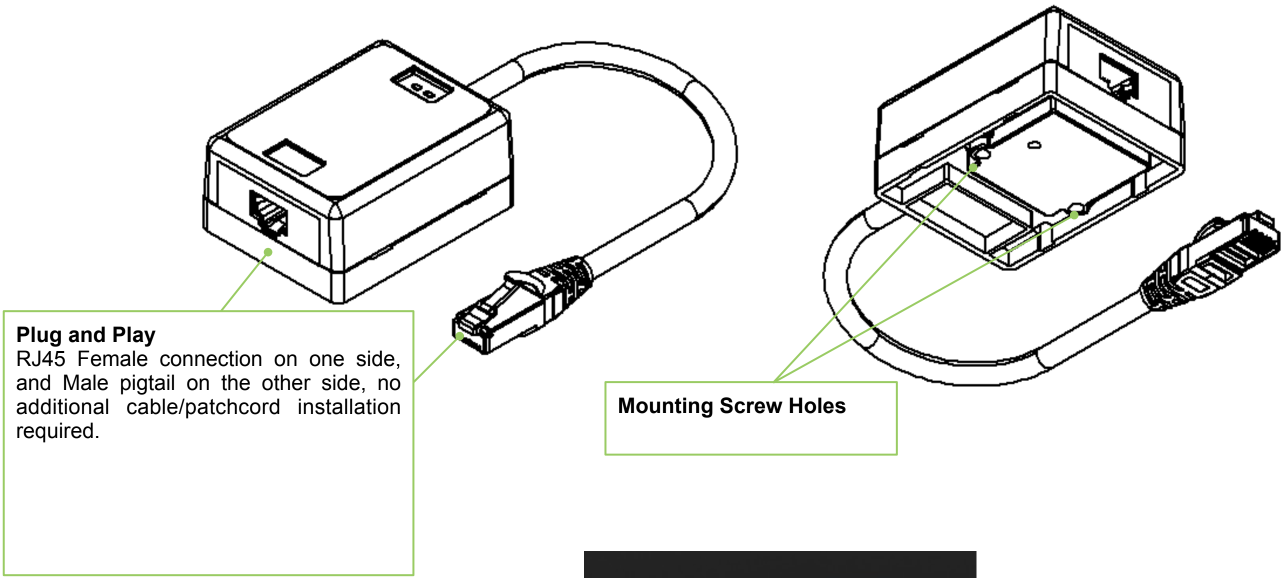
FEATURES

1. 10/100/1000 Base-T Ethernet
2. Working differential current protection between network equipments
3. Ground loop prevention
4. 4 kV isolation, excellent for protecting expensive industrial equipments
5. Suitable for 60601-1 medical applications, protect patients from electrical shock due to potential difference in network ports.
6. Transparent in network connection, do not effect network operation
7. Plug and Play, no additional cable, patchcord, or installation required.
8. Professional finishing with male-to-female adaptor connection
9. Equipped with identification icons
10. Integrated screw mounting holes
11. Flame retardant housing
12. Low loss isolation transformer

PROTECTED!

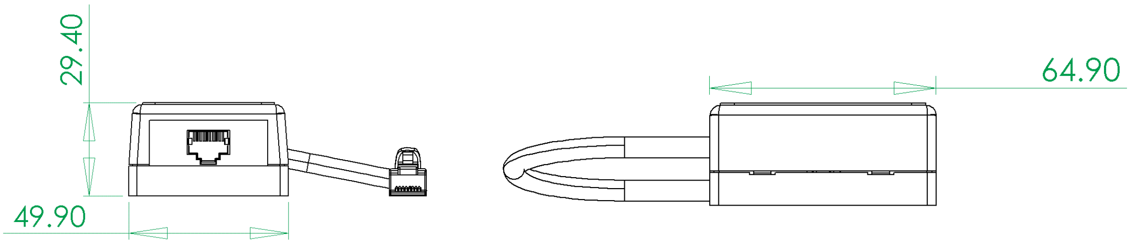






Installation Precautions!

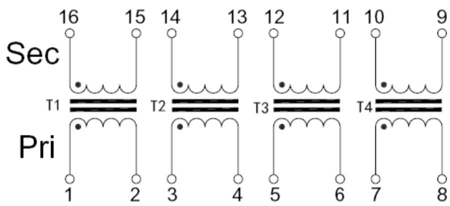
1. Turn OFF the equipment BEFORE installation, to avoid electric shock
2. DO NOT connect POE device to the network galvanic Isolator
3. Wire-Map error expected when test with Field Testers, this is normal with the isolation transformer
4. Insertion loss (attenuation) High at low frequencies due to nature of isolation transformer



Specifications

Medical Electrical Equipment
UL 2601-1
JIS T0601-1
IEC 60601-1
EN 60601
EN 60601-1
EN 60601-2

SCHEMATIC:



Technical properties

Operating Temperature 0~60℃
Operating Humidity 10~90% (non-condensing)
Network Performance IEEE 803.2 10/100/1000-BaseT
Pin Assignment T568B
Transmission Length 90m
Voltage Withstand between the network connectors 4000 Volts
Return Loss of isolation component <-6db @ 100 MHz

PERFORMANCE TESTING – Cat 5e 90m channel

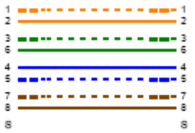
Without Isolator

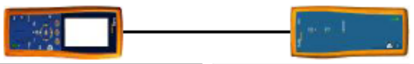
Date / Heure: 10/06/2011 10:28:39am
Marge de Sécurité: 6.0 dB (NEXT 36-45)
Limite: ISO11801 Channel Class D
Type de Câble: Cat 5e UTP

Opérateur: MMC LABS
Version du logiciel: 2.4100
Version des limites: 1.6000
NVP: 69.0%

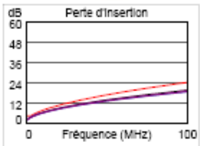
Modèle: DTX-1800
Num. Sér. principale: 1580319
Num. Sér. distante: 1580320
Adaptateur principal: DTX-CHA002
Adaptateur distant: DTX-CHA002

Schéma de câblage (T568B)
CORRECT





Longueur (m)	[Paire 78]	88.7
Délai de prop. (ns), Lim. 555		438
Ecart entre paires (ns), Lim. 50		9
Résistance (ohms), Lim. 25.0		19.8
Perte d'insertion Marge (dB)	[Paire 45]	4.7
Fréquence (MHz)	[Paire 45]	100.0
Limite (dB)	[Paire 45]	24.0



CORRECT	Pire marge MAIN	Pire marge SR	Pire valeur MAIN	Pire valeur SR
Pire paire	36-45	45-78	36-45	45-78
NEXT (dB)	6.0	7.7	7.0	7.7
Fréq. (MHz)	17.0	92.5	83.5	92.5
Limite (dB)	43.2	30.7	31.4	30.7
Pire paire	36	36	36	45
PS NEXT (dB)	6.7	8.4	8.4	9.1
Fréq. (MHz)	72.5	17.0	92.0	92.5
Limite (dB)	29.5	40.2	27.7	27.7

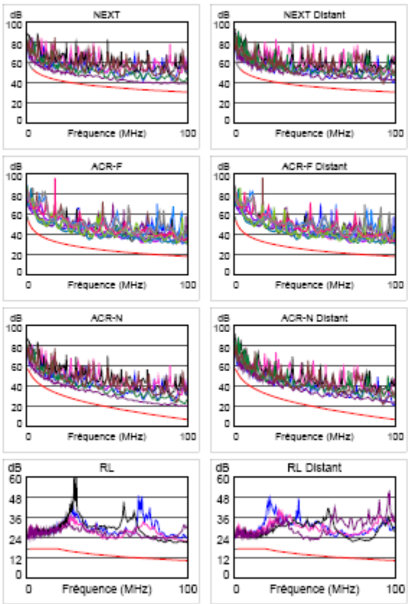
CORRECT	MAIN	SR	MAIN	SR
Pire paire	45-36	36-45	36-45	45-36
ACR-F (dB)	8.8	8.8	11.4	11.5
Fréq. (MHz)	39.3	39.0	100.0	100.0
Limite (dB)	25.5	25.6	17.4	17.4
Pire paire	36	12	36	36
PS ACR-F (dB)	11.3	11.3	12.3	12.4
Fréq. (MHz)	39.0	36.0	97.3	100.0
Limite (dB)	22.6	23.3	14.6	14.4

CORRECT	MAIN	SR	MAIN	SR
Pire paire	12-36	12-36	36-45	12-36
ACR-N (dB)	6.8	7.3	13.0	14.2
Fréq. (MHz)	2.5	2.5	100.0	98.5
Limite (dB)	52.9	52.9	6.1	6.4
Pire paire	36	36	36	36
PS ACR-N (dB)	7.2	7.9	13.9	14.6
Fréq. (MHz)	2.4	2.4	97.0	98.5
Limite (dB)	50.2	50.2	3.7	3.4

CORRECT	MAIN	SR	MAIN	SR
Pire paire	78	78	45	45
RL (dB)	7.3	6.4	10.1	10.1
Fréq. (MHz)	3.8	13.1	86.3	73.5
Limite (dB)	17.0	17.0	10.6	11.3

Conforme aux normes de réseaux:

10BASE-T	100BASE-TX	100BASE-T4
1000BASE-T	ATM-25	ATM-51
ATM-155	100VG-AnyLan	TR-4
TR-16 Active	TR-16 Passive	



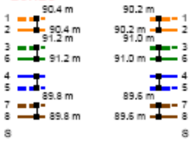
With Isolator

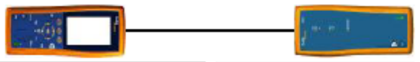
Date / Heure: 10/06/2011 11:07:46am
Marge de Sécurité: 2.4 dB (NEXT 36-45)
Limite: ISO11801 Channel Class D
Type de Câble: Cat 5e UTP

Opérateur: MMC LABS
Version du logiciel: 2.4100
Version des limites: 1.6000
NVP: 69.0%

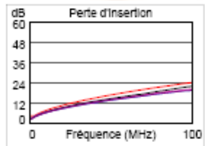
Modèle: DTX-1800
Num. Sér. principale: 1580319
Num. Sér. distante: 1580320
Adaptateur principal: DTX-CHA002
Adaptateur distant: DTX-CHA002

Schéma de câblage (T568B)
ECHEC





Longueur (m)	[Paire 78]	89.8
Délai de prop. (ns), Lim. 555		444
Ecart entre paires (ns), Lim. 50		10
Résistance (ohms), Lim. 25.0		3.6
Perte d'insertion Marge (dB)	[Paire 45]	2.2
Fréquence (MHz)	[Paire 45]	100.0
Limite (dB)	[Paire 45]	24.0

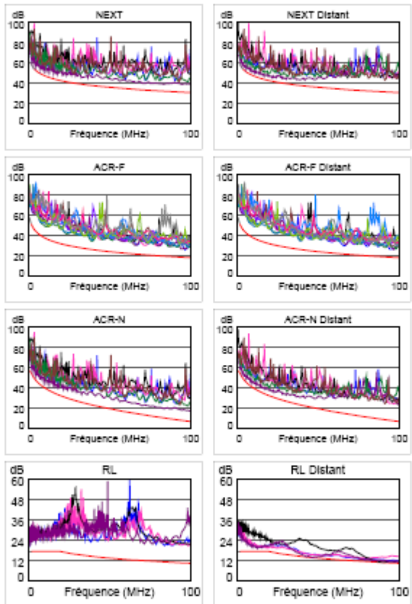


CORRECT	Pire marge MAIN	Pire marge SR	Pire valeur MAIN	Pire valeur SR
Pire paire	36-45	36-45	36-45	36-45
NEXT (dB)	3.9	2.4	7.6	5.4
Fréq. (MHz)	9.6	4.8	94.3	41.8
Limite (dB)	47.3	52.3	30.5	36.6
Pire paire	36	36	36	36
PS NEXT (dB)	5.6	4.0	8.5	7.3
Fréq. (MHz)	7.3	9.8	91.8	47.8
Limite (dB)	46.3	44.2	27.7	32.6

CORRECT	MAIN	SR	MAIN	SR
Pire paire	12-36	12-36	12-36	12-36
ACR-F (dB)	7.5	7.7	7.5	7.7
Fréq. (MHz)	96.3	94.5	96.3	94.5
Limite (dB)	17.7	17.9	17.7	17.9
Pire paire	36	12	36	12
PS ACR-F (dB)	9.0	9.4	9.0	9.4
Fréq. (MHz)	96.8	96.3	96.8	96.3
Limite (dB)	14.7	14.7	14.7	14.7

CORRECT	MAIN	SR	MAIN	SR
Pire paire	36-45	36-45	36-45	36-45
ACR-N (dB)	4.7	3.0	10.4	16.6
Fréq. (MHz)	3.5	3.5	99.3	99.0
Limite (dB)	50.2	50.2	6.2	6.3
Pire paire	36	36	45	45
PS ACR-N (dB)	5.3	4.4	11.5	16.0
Fréq. (MHz)	2.4	2.4	93.0	98.8
Limite (dB)	50.2	50.2	4.5	3.3

CORRECT	MAIN	SR	MAIN	SR
Pire paire	78	45	12	45
RL (dB)	5.5	0.0*	9.3	0.0
Fréq. (MHz)	2.8	89.8	88.5	89.8
Limite (dB)	17.0	10.5	10.5	10.5



NETWORK OPERATION TESTING – PING command

```
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
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Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
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Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.1:
    Packets: Sent = 100, Received = 100, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

<u>100 packets sent</u>
<u>100 packets received</u>
<u>0 loss</u>

TRANSFORMER HIGH VOLTAGE TESTING

ITEM	TEST ITEM	REQMTS	1				2			
			T1	T2	T3	T4	T1	T2	T3	T4
1	Pri OCL	500uH MIN,600uH TYP 100KHz/0.2V	569	854	568	799	816	744	862	660
2	Pri LL	0.25uH MAX 100KHz/0.2V	0.15	0.12	0.15	0.13	0.14	0.13	0.12	0.13
3	CWW	25pF MAX 100KHz/0.2V	10.2	10.3	9.8	9.4	9.4	10.1	9.8	9.6
4	Pri DCR	0.5 Ω MAX	0.36	0.37	0.35	0.34	0.32	0.35	0.34	0.33
5	HI-POT	4000Vrms/0.5mA/2Sec	OK	OK	OK	OK	OK	OK	OK	OK
6	TURNS RATIO	Pri:Sec =1:1±5%	OK	OK	OK	OK	OK	OK	OK	OK

Test 1: Primary winding Open Circuit Inductance (Pri OCL)
Unit of measure: uH
Requirement: 500uH minimum
Test method: send input signal at 100KHz/0.2V, and measure the inductance

Test 2: Primary Leakage Inductance (Pri LL)
Unit of measure: uH
Requirement: 0.25uH Max
Test method: send input signal at 100KHz/0.2V, and measure the inductance

Test 3: Interwinding Capacitance (CWW)
Unit of measure: pF
Requirement: 25pF Max
Test method: send input signal at 100KHz/0.2V, and measure the capacitance

Test 4: Primary Direct Current Resistance (Pri DCR)
Unit of measure: Ohm
Requirement: 0.5Ohm Max
Test method: send direct current to Micro Ohmmeter, and measure the resistance

Test 5: High Voltage test for isolation strength (Hipot)
Unit of measure: Volt
Requirement: 4000Vrms
Test method: send high voltage on one side of the transformer at 0.5mA current for 2 seconds, and no current should be measured on the other side of the transformer.

Note: ISOLATION VOLTAGE
'Hi Pot Test', 'Flash Tested', 'Withstand Voltage', 'Proof Voltage', 'Dielectric Withstand Voltage' & 'Isolation Test Voltage' are all terms that relate to the same thing, a test voltage, applied for a specifi ed time, across a component designed to provide electrical isolation, to verify the integrity of that isolation

Test 6: Turns Ratio
Requirement: 1:1 +/- 5%
Test method: Checking of winding ratio between primary winding and secondary winding
hen using field tester to test a channel link equipped with a NGI, several error signals will occur:

Field Testing white paper

When using field tester to test a channel link equipped with a NGI, several error signals will occur:

1. Wire map error –The error in wire map is caused by coils connecting each wire pairs inside the isolation component. The wire map testing is done by sending DC signals to each pair, so it will show short circuit at the coils (pairs 1-2, 3-6, 4-5, 7-8). However, when signals are transmitted at high frequencies (>0.1MHz), the coils behave as open circuit. Thus, there is no longer short circuit in real network operation.

2. High insertion loss – This is effected by the isolation component. There is no physical connection of signal lines inside the isolation component. Signals are transmitted by induction inside the isolation component. Due to nature of the isolation mechanism, insertion loss is increased. Insertion loss is lower and lower as frequency increases.

3. High return loss – This is effected by the isolation component. There is no physical connection of signal lines inside the isolation component. Signals are transmitted by induction inside the isolation component. Due to nature of the isolation mechanism, return loss is increased. Return loss is higher and higher as frequency increases.

Insertion loss and Return loss statement

In telecommunications, insertion loss is the loss of signal power resulting from the insertion of a device in a transmission line or optical fiber and is usually expressed in decibels (dB).

In telecommunications, return loss or reflection loss is the loss of signal power resulting from the reflection caused at a discontinuity in a transmission line or optical fiber. This discontinuity can be a mismatch with the terminating load or with a device inserted in the line. It is usually expressed as a ratio in decibels (dB);