Digital Network Interface Panel: 64 Circuits (DNI-3)

User Manual

1.1 Overview: Digital Network Interface Panel

Telect's DNI-3 is a multifunction support panel for DS3 telecommunications networks. It is an accessible and centralized interconnect point between digital cross-connect systems (DCSs) and central office network elements (NEs).

The DNI-3 panel serves as a platform for circuit configuration changes, maintenance activities, and troubleshooting procedures. The DNI-3 becomes an extension of the DCS backplane that provides complete circuit access, thus removing the risk of interrupting DCS operations.
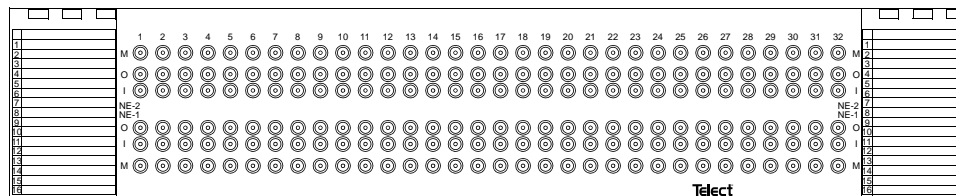

Figure 1 - DNI-3 Panel (64 Circuits)

1.1.1 Capabilities

- High circuit densities (up to 1280 coax cables per panel)
- Efficient circuit migration for system expansion
- Quick circuit patching, troubleshooting, and monitoring
- Compatability with all DS3, STS1, and STS3 signal types and system management software

1.1.2 Features

- Mini-WECO Twist Lok™ jacks (TLJs)
- Circuit designation labels
- Hinged designation holders

1.1.3 System-Level Applications

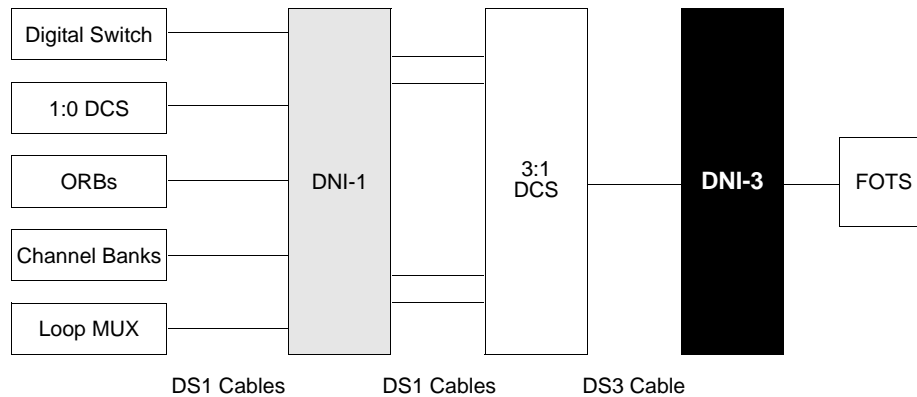Figure 2 shows a DNI-3 within a typical telecommunications network.
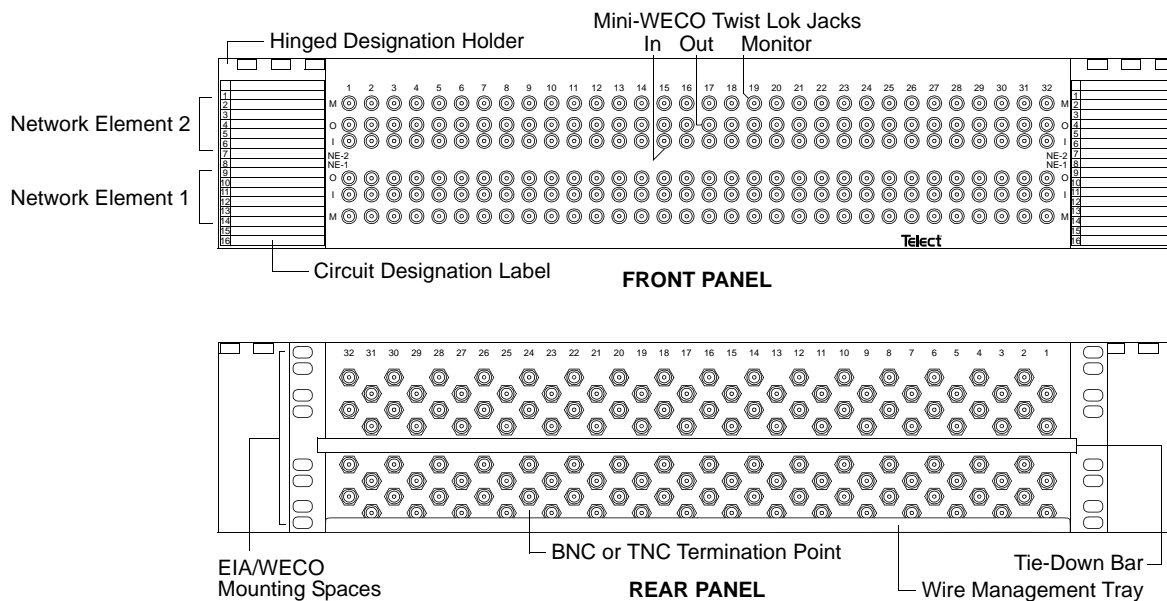

Figure 2 - DNI-3 in a Typical Telecom Network

Figure 3 - Main Assemblies

1.1.4 Physical Specifications

H x W x D: 5.25 x 23.0 x 10.0 (inches); 13.3 x 58.4 x 25.4 (cm)
Weight: 30 lb (13.6 kg)

1.2 Inspection

Please read these instructions carefully before beginning installation. If you need assistance, call Technical Support at 1-888-821-4856 (domestic calls), or 509-921-6161 (Option 2), or email us at getinfo@telect.com.

Inspect equipment after unpacking and compare it to the packing list.

Immediately report any shipping damage, defects, or missing parts to Telect at 1-800-551-4567. Keep all documentation that comes with your shipment.

Telect is not liable for shipping damage. If the product is damaged, notify the carrier and call Telect's Customer Service Department at 1-800-551-4567 (domestic only) or 1-509-926-6000 for further recourse.

NOTE: For service or warranty information, please visit the telect.com website, or email inquiries to getinfo@Telect.com and click on the "Support" tab, or phone us at 800-551-4567 (domestic only) or 509-926-6000.

1.3 Installation Considerations

1.3.1 Location and Space

The DNI-3 panel mounts flush into both unequal-flange and equal-flange (EIA or WECO) 23" (58.4 cm) network bays. The primary limiting factor of a DNI-3 rack configuration is the number of cables a network bay can accommodate. (The DNI can accommodate 1280 coax cables.)

NOTE: Telect recommends a maximum of 14 DNI-3 panels per bay, regardless of bay capacity, for easy access and adequate room for cable routing.

Table 1 - DNI-3 Space Requirements

DCS Terminations	Panels	Total Cables	Cable Space Needed per Side of Bay (in.^{2})	EIA Bay Spaces Required
1–32	1	128	1.64	3
33–64	2	256	3.28	6
65–96	3	384	4.92	9
97–128	4	512	6.55	12
129–160	5	640	8.19	15
161–192	6	768	9.83	18
193–224	7	896	11.47	21
225–256	8	1024	13.11	24
257–288	9	1152	14.75	27

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Table 1 - DNI-3 Space Requirements

DCS Terminations	Panels	Total Cables	Cable Space Needed per Side of Bay (in.^{2})	EIA Bay Spaces Required
289–320	10	1280	16.38	30
321–352	11	1408	18.02	33
353–384	12	1536	19.66	36
385–416	13	1664	21.30	39
417–448	14	1792	22.94	42
449–480	15	1920	24.58	45
481–512	16	2048	26.21	48
513–544	17	2176	27.85	51
545–576	18	2304	29.49	54
577–608	19	2432	31.13	57
609–640	20	2560	32.77	60
641–672	21	2688	34.41	63
673–704	22	2816	36.04	66
705–736	24	2944	37.68	69
737–768	24	3072	39.32	72
769–800	25	3200	40.96	75

In the above table, the first shaded row is the capacity for a 7-ft bay. The second shaded row is the capacity for an 8-ft bay; the last shaded row is for an 11.5-ft bay.

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1.3.1.1 Network Bay Extender Panel

Each network bay extender panel provides 81 square inches (522.5 square cm) of cable routing space (enough for 1280 RG59 cables). The panel comes with nine cable management brackets that secure and channel the circuit cables. Telect recommends two extender panels for each fully provisioned DNI-3 network bay. This provides adequate cable routing space for cables going to and coming from the DNI-3 network bay.

1.3.2 Tools and Equipment

No special tools or equipment are required.

1.4 Installation Procedure

1. Align the DNI-3 chassis mounting holes with the mounting holes of the network bay.

2. Insert four 24 x 1/2" mounting screws (two on each side) into the mounting holes and securely tighten them.

3. Route the DCS IN cables to one side of the network bay. Tie-wrap the cables in place within the extender panel cable management brackets.

Extender Panel

Existing Network Bay

Figure 4 - Installing the DNI-3

4. Starting at the lowest DNI-3 panel and working upward, connect the DCS IN cables to the NE-1 IN termination points on the rear of the DNI-3 panels.

5. Secure the DCS IN cables to the wire management tray via the tie-down slots.

6. Route the DCS OUT cables to the opposite side of the network bay. Tie-wrap the cables in place within the extender panel cable management brackets.

7. Starting at the lowest DNI-3 panel and working upward, connect the DCS OUT cables to the NE-1 OUT termination points on the rear of the DNI-3 panels.

8. Secure the DCS OUT cables to the wire management tray via the tie-down slots.

9. Route the NE IN cables to the same side of the network bay as the DCS IN cables. Tie-wrap the cables in place within the extender panel cable management brackets.

10. Starting at the lowest DNI-3 panel and working upward, connect the NE IN cables to the NE-2 IN termination points on the rear of the DNI-3 panels.

11. Secure the NE IN cables to the tie-down bar.

12. Route the NE OUT cables to the same side of the network bay as the DCS OUT cables. Tie-wrap the cables in place within the extender panel cable management brackets.
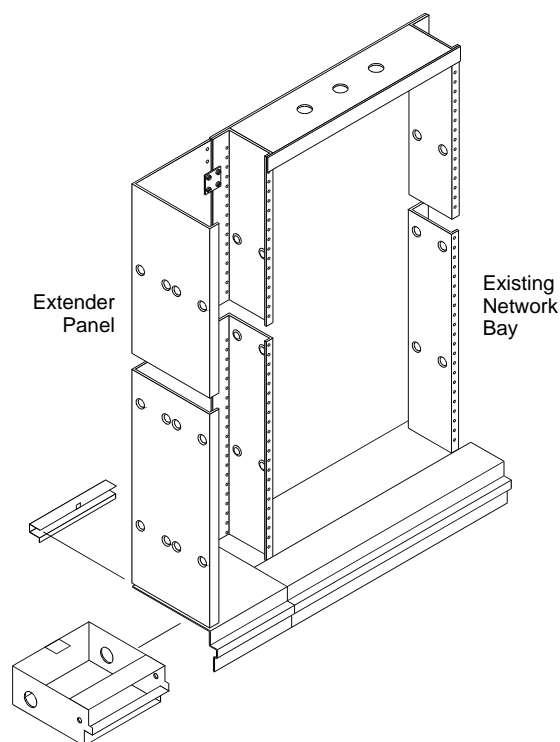
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13. Starting at the lowest DNI-3 panel and working upward, connect the NE OUT cables to the NE-2 OUT termination points on the rear of the DNI-3 panels.

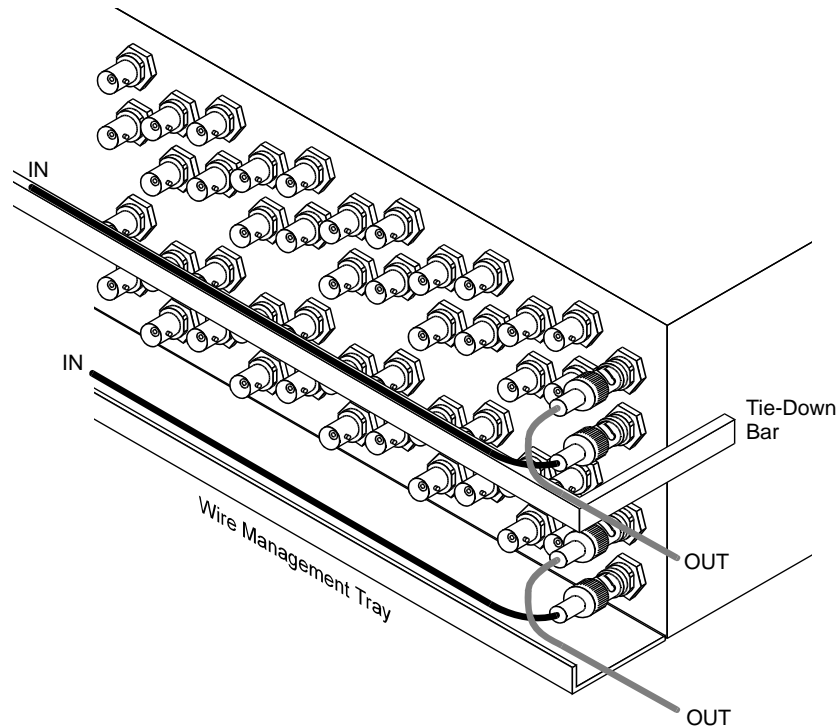14. Secure the NE OUT cables to the tie-down bar.

Figure 5 - Securing the Cables

1.5 Electrical Operation

1.5.1 Data Signals

The DCS circuit cables terminate at the lower pair of termination points on the rear of the DNI-3 panel, labeled NE-1. The OUT cable connects to the upper NE-1 termination pont and the IN cable connects to the lower NE-1 termination point.

The NE circuit cables terminate at the upper pair of termination points on the rear of the DNI-3 panel, labeled NE-2. The OUT cable connects to the upper NE-2 termination point and the IN cable connects to the lower NE-2 termination point.
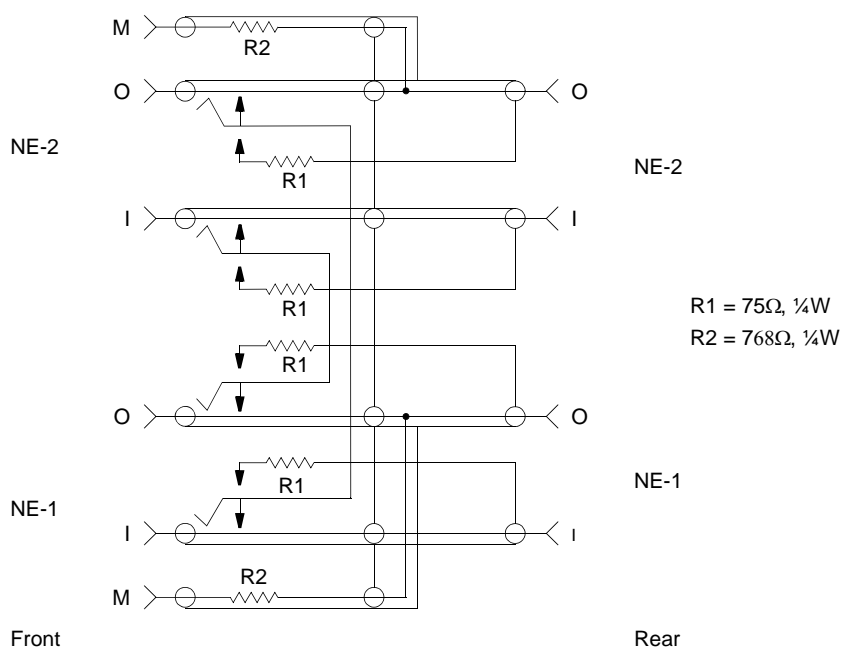

$R1 = 75\Omega, \frac{1}{4}W$
$R2 = 768\Omega, \frac{1}{4}W$

Figure 6 - NE Circuit Cables

Internally, the DCS circuits and the NE circuits are cross-connected.

Inserting a Mini-WECO patch cord into the upper monitor Twist Lok Jack (TLJ) on the front of the DNI-3 panel accesses the NE circuit. Inserting a Mini-WECO patch cord into the lower monitor TLJ on the front of the DNI-3 panel accesses the DCS circuit.

1.6 User Functions

1.6.1 In-Service Patching

To temporarily connect an NE or DCS circuit to an alternate DCS or NE circuit on the same or a different DNI-3 panel or DSX without disrupting service, follow the steps below, using the Twist Lok Jacks (TLJs) on the front of the appropriate DNI-3 panels and the following additional equipment:

• Four Mini-WECO patch cords (Mini-WECO plug at each end)

• Two 75-ohm Mini-WECO terminating plugs

• One dual bridging office repeater (BOR), or two single BORs

1. Using one Mini-WECO patch cord:

   a. Insert the plug of one end into BOR position 1, INPUT.

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b. Insert the plug of the other end to the monitor TLJ at the first location.

2. Using a second Mini-
    WECO patch cord:

    a. Insert the plug of one
        end into BOR posi-
        tion 1, OUTPUT.

    b. Insert the plug of
        the other end into
        the IN TLJ at the
        second location.

3. Using a third Mini-WECO
    patch cord:

    a. Insert the plug of one
        end into BOR posi-
        tion 2, INPUT.

    b. Insert the plug of the
        other end into the
        monitor TLJ at the
        second location.

4. Using a fourth Mini-
    WECO patch cord:

Figure 7 - Patching

    a. Insert the plug of one
        end into BOR position 2, OUTPUT.

    b. Insert the plug of the other end into the IN TLJ at the first location.

5. Insert a Mini-WECO terminating plug into the OUT TLJ at the first location.

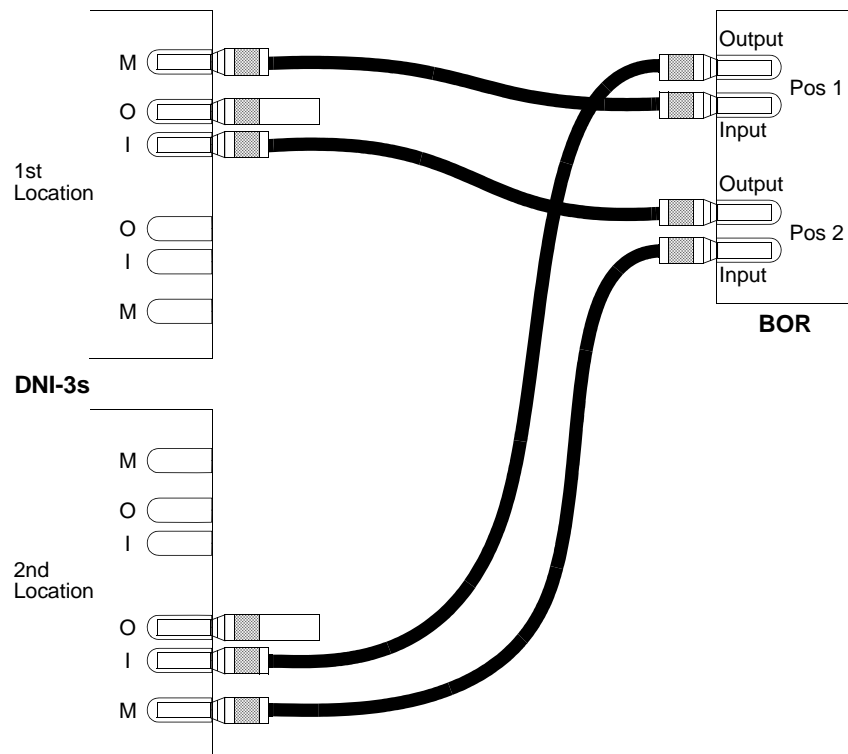6. Insert a second Mini-WECO terminating plug into the OUT TLJ at the second location.

1.6.2 Out-Of-Service Patching

To temporarily connect an NE or DCS circuit to an alternate DCS or NE circuit on the same or a different DNI-3 panel or DSX when service has been disrupted, follow the steps below, using the TLJs on the front of the appropriate DNI-3 panels and two Mini-WECO patch cords (Mini-WECO plug at each end).

1. Using one Mini-WECO patch cord:

    a. Insert the plug of one end into the IN TLJ at the first location.

    b. Insert the plug of the other end into the OUT TLJ at the second location.

2. Using a second Mini-WECO patch cord:

    a. Insert the plug of one end into the OUT TLJ at the first location.

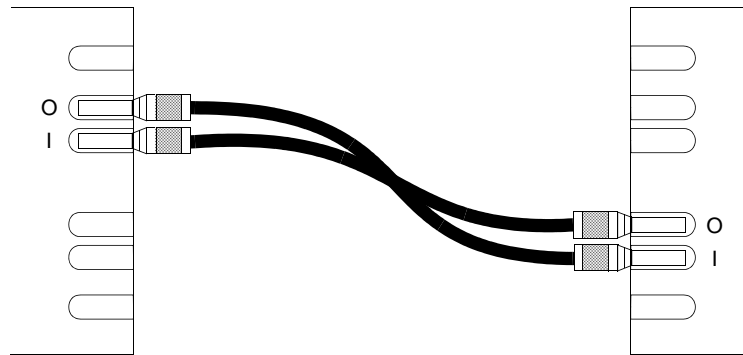b. Insert the plug of the other end into the IN TLJ at the second location.

Figure 8 - Inserting the Plug

1.6.3 Looping

To temporarily loop an NE or DCS OUT port to its IN port, use the TLJs on the front of the DNI-3 panel and a Mini-WECO looping plug.

Insert the looping plug into both the IN and OUT TLJs on the front of the DNI-3 panel for looping either the NE (NE-2) or the DCS (NE-1) circuit.

1.6.4 Monitoring

Use the TLJs on the front of the DNI-3 panel and the following additional equipment:

- Mini-WECO patch cord (Mini-WECO plug at each end)

- Test set

1. *To monitor the NE circuit outputs,* insert a Mini-WECO patch cord into the NE (upper) Monitor TLJ.

   To monitor the DCS circuit outputs, insert a Mini-WECO patch cord into the DCS (lower) Monitor TLJ.

2. Connect the other end of the the patch cord to the test set to complete your connection and perform monitoring.

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1.7 Service

> ⚠️ **CAUTION**
>
> **CAUTION! Only qualified technicians may install and maintain this product.**

1.7.1 Owner Maintenance

Telect's DNI-3 does not need preventive maintenance. If problems occur after initial installation, check all cable connections and the installation instructions in Section 2.

1.7.2 In-Warranty Service

Contact Telect's quality call center at 877-471-7245 or e-mail us at quality@telect.com. Telect will ship a new replacement product, along with a return shipping label and authorization information. When you receive your replacement product, pack up the defective product and return it to Telect using the return label, box and any additional information provided.

1.7.3 Out-Of-Warranty Service

Follow the In-Warranty directions above. Telect charges a processing fee for out-of-warranty service, and you must submit a Purchase Order along with a Return Material Authorization (RMA) before returning equipment. The processing fee guarantees a repair estimate and is credited against actual material and labor costs. Call Telect's quality call center at 877-471-7245 for more information.

1.7.4 Repacking for Shipment

1. Tag the equipment showing owner's name, address, and telephone number, together with a detailed description of the problem.

2. Use the original shipping container if possible. If you do not have it, package the equipment in a way to prevent shipping damage. Include the RMA inside the container and legibly print the RMA number on the outside of the package, near the shipping address.

3. Insure the package.

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