Wiring Termination

100-pin, 68-pin, and 50-pin SCSI-II Connectors

P. 9-1

DIN-96DI/DO
(Includes ACL-102100)

P. 9-5

DIN-68S/1S (Includes ACL-10569-1)
DIN-68S/1M (Includes ACL-10568-1)

P. 9-5

DIN-100S
(Includes ACL-102100)

P. 9-5

DIN-50S
(Includes ACL-10250)

P. 9-5

DIN-502S
(Includes ACL-10252)

50-pin Ribbon Connectors

P. 9-3

DIN-24G
(for Grayhill IO modules)

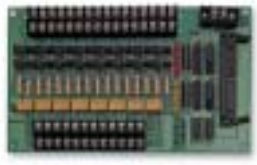
P. 9-2

TB-24R
(Includes ACL-10150-1.5)

P. 9-2

TB-24P
(Includes ACL-10150-1.5)

P. 9-3

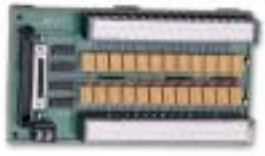


TB-16P8R
(Includes ACL-10150-1.5)

P. 9-5

DIN-50P
(Includes ACL-10150-1.5)

P. 9-2

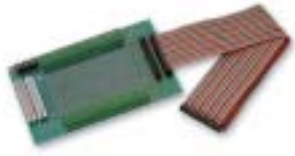


DIN-24R/12, DIN-24R/24
(Includes ACL-10150-1.5)

P. 9-2

DIN-24P
(Includes ACL-10150-1.5)

P. 9-3



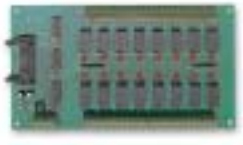
TB-24
(Includes ACL-10150-1.5)

20-pin Header Connectors

P. 9-4

ACLD-9182A
(Includes ACL-10120-1)

P. 9-4



ACLD-9185
(Includes ACL-10120-1)

P. 9-6

ACLD-9881
(Includes ACL-10137-1)

P. 9-6

ACLD-9178
(Includes 2 ACL-10120-1)

P. 9-5

DIN-20P
(Includes ACL-10120-1)

37-pin D-type Connectors

P. 9-6

ACLD-9137 (male)
ACLD-9137F (female)

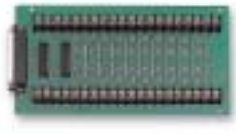
P. 9-6

ACLD-9138
(Includes ACL-10237-1)

P. 9-6

ACLD-8125
(Includes ACL-10137-1)

P. 9-6



ACLD-9188
(Includes 2 ACL-10120-1)

P. 9-5

DIN-37D
(Includes ACL-10137-1)

DIN-96DI

96-CH Isolated DI Termination Board with DIN-Rail Mounting

Features

- 96-CH isolated digital inputs
- For use with PCI-7396
- Isolated input voltage up to 24 V
- 2500 VRMS optical isolation
- Screw terminals for easy field wiring

Specifications

- Isolated Digital Input
  - Number of channels: 96
  - Maximum input range: 24 V
  - Digital logic levels
    - 0-24 V, non-polarity
      - Input high voltage: 10-24 V
      - Input low voltage: 0-2 V
- Input Resistance: 4.7 kΩ @ 0.5W
- Isolation voltage: 2500 VRMS
- I/O connector: 100-pin SCSI-II female
- Operating temperature: 0 to 60 ˚C
- Storage temperature: -20 to 80 ˚C
- Relative humidity: 5 to 95%, noncondensing
- Power consumption

+5V
48 mA maximum

- Dimensions: 226 mm x 121 mm x 48 mm (WxLxH)

Ordering Information

- **DIN-96DI**
  96-CH Isolated DI Termination Board with DIN-Rail Mounting (Including One 1-meter ACL-102100 Cable)

DIN-96DO

96-CH Isolated DO Termination Board with DIN-Rail Mounting

Features

- 96-CH isolated digital outputs
- For use with PCI-7396
- Sink current up to 500 mA on each isolated output
- 2500 VRMS optical isolation
- Screw terminals for easy field wiring

Specifications

- Number of channels: 96
- Output type: open collector Darlington transistor
- Sink current
  - Max. 500 mA for only one Darlington pair
  - 500 mA for all Darlington pair @ 20% duty
- Power dissipation: Max. 2.25 W per chip (8 DO channels)
- Supply voltage: 5-35 VDC
- Isolation voltage: 2500 VRMS
- Connector: 100-pin SCSI-II female
- Operating temperature: 0 to 60 ˚C
- Storage temperature: -20 to 80 ˚C
- Relative humidity: 5 to 95%, noncondensing
- Power consumption

+5V
102 mA maximum

- Dimensions: 226 mm x 121 mm x 48 mm (WxLxH)

Ordering Information

- **DIN-96DO**
  96-CH Isolated DO Termination Board with DIN-Rail Mounting (Including One 1-meter ACL-102100 Cable)

* All specifications are subject to change without further notice.

DIN-24R/TB-24R

Termination Board with 24 Relay Outputs

Features

- 24-CH single-pole, double-throw (SPDT form C) relay outputs
- 50-pin Opto-22™ compatible connector
- Maximum switching voltage 220 VDC/250 VAC
- Maximum switching current up to 2 ADC/AC
- LED indicator for relay status
- On-board relay driver circuitry
- Screw terminals for easy filed wiring
- DIN socket available on DIN-24R
- 50-pin SCSI-type connector available on DIN-24R to interface with ND-6058

DIN-24R

TB-24R

Introduction

The DIN-24R and TB-24R relay output boards are designed for industrial control applications. It contains 24 electro-mechanical SPDT relays that can be driven by the 24-bit digital output ports of the PCI-7224, PCI-7248, PCI-7296, ACL-7112, ACL-7124 and PET-48DIO, ND-6058.

Each relay's switching capacity is 60 W, 125 VA. The normally closed, and common contacts for each relay are made available for maximum flexibility.

Specification

- Relay Output
  - Number of channels: 24
  - Relay type: SPDT (Form C)
  - Contact rating
    - AC: 125 VAC @ 0.6 A
    - DC: 30 VDC @ 2 A
  - Breakdown voltage: 1500 VRMS
  - Contact resistance: 50 mΩ
  - Relay ON/OFF time
    - Operate time: 3 ms
    - Release time: 3 ms
  - LED Indicators for relay status: per channel
  - Expected life: 5 x 10^5 operations @ 2 A, 30 VDC
  - External coil excitation voltage
    - 12 V nominal, 19.2 V maximum (TB-24R/12 & DIN-24R/12)
    - 24 V nominal, 38.5 V maximum (TB-24R/24 & DIN-24R/24)
- I/O Connector
  - 50-pin ribbon male
  - 50-pin SCSI-II female
- Operating temperature: 0 to 60 ºC
- Storage temperature: -20 to 80 ºC
- Relative humidity: 5 to 95%, noncondensing
- Power consumption

	+12 V	+24 V
TB-24R/12 DIN-24R/12	288 mA maximum	--
TB-24R/24 DIN-24R/24	--	144 mA maximum

- Dimensions
  - TB-24R: 220 mm x 132 mm x 15 mm (WxLxH)
  - DIN-24R: 203 mm x 120 mm x 55 mm (WxLxH)

Ordering Information

- **TB-24R/12**
  Termination Board with 24-CH Relay Outputs @ 12V Coil Voltage (Including One 1.5-meter ACL-10150 Cable)
- **TB-24R/24**
  Termination Board with 24-CH Relay Outputs @ 24V Coil Voltage (Including One 1.5-meter ACL-10150 Cable)
- **DIN-24R/12**
  Termination Board with 24-CH Relay Outputs @ 12V Coil Voltage and DIN-Rail Mounting (Including One 1.5-meter ACL-10150 Cable)
- **DIN-24R/24**
  Termination Board with 24-CH Relay Outputs @ 24V Coil Voltage and DIN-Rail Mounting (Including One 1.5-meter ACL-10150 Cable)

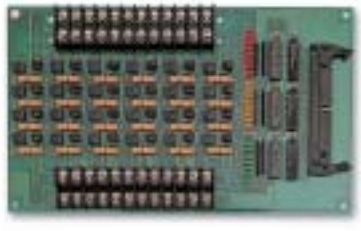
DIN-24P/TB-24P

Termination Board with 24 Opto-Isolated Digital Inputs

Features

- 24-CH opto-isolated digital inputs
- 50-pin Opto-22 compatible connector
- Non-polarity digital input range
- Isolated input voltage up to 24 V
- 5000 VRMS optical isolation
- Jumper selectable for voltage input or dry-contact input mode
- LED indicator for input status
- Screw terminals for easy field wiring
- DIN socket is available on DIN-24P
- 50-pin SCSI-type connector available on DIN-24P to interface with ND-6058

DIN-24P



TB-24P

Introduction

The DIN-24P and TB-24P digital input termination boards feature high-voltage opto-isolation on all input channels. They provides 24 channels that are accessed through a single 50-pin connector, standard on the NuDAQ digital I/O boards, such as ACL-7122, ACL-7124, PET-48DIO, PCI-7224, PCI-7248, PCI-7296 and ND-6058.

Specification

- Input modes (jumper selectable on per channel basis)
  - Voltage input
  - Dry contact input
- Isolated digital input
  - Number of channels: 24, maximum
  - Maximum input range: 24 V, non-polarity
  - Digital logic levels
    - 0-24 V, non-polarity
      - Input high voltage: 5-24 V
      - Input low voltage: 0-1.5 V
  - Input resistance:1.2 kΩ @ 0.5 W
  - Isolation voltage: 5000 VRMS
- Dry contact input
  - Number of channels: 24
  - Internal pull-up voltage supply: +5 VDC
- LED Indicators for input status: one per channel
- I/O Connector
  - 50-pin ribbon male
  - 50-pin SCSI-II female
- Operating temperature: 0 to 60 ºC
- Storage temperature: -20 to 80 ºC
- Relative humidity: 5 to 95%, noncondensing
- Power requirement:

+5V
40 mA maximum

- Dimensions
  - TB-24P: 220 mm x 132 mm x 23 mm (WxLxH)
  - DIN-24P: 259 mm x 121 mm x 55 mm (WxLxH)

Ordering Information

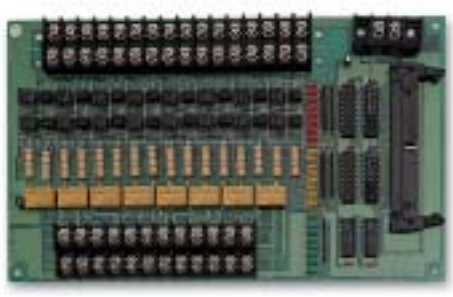
- **TB-24P/24**
  Termination Board with 24-CH Isolated Digital Inputs (Including One 1.5-meter ACL-10150 Cable)
- **DIN-24P/24**
  Termination Board with 24-CH Isolated Digital Inputs and DIN-Rail Mounting (Including One 1.5-meter ACL-10150 Cable)

TB-16P8R

Termination Board with 16-CH Isolated DI & 8-CH Relay Outputs

Features

- 16-CH isolated digital inputs
- Non-polarity digital input range
- Isolated input voltage up to 24 V
- 5000 V_{RMS} optical isolation
- Jumper selectable for voltage input or dry-contact input mode
- 8-CH single-pole double-throw (SPDT form C) relays
- Maximum switching voltage 220 V_{DC}/250 V_{AC}
- Maximum switching current up to 2 $A_{DC/AC}$
- On-board relay driver circuitry
- LED indicators for both input and relay status
- Screw terminals for easy field wiring



Specifications

- Number of isolated DI channels: 16
- Number of relay output channels: 8
- LED Indicators for input and output status: one per channel
- Electronics characteristics of isolated DI: refer to the TB-24P's specifications
- Electronics characteristics of relay outputs: refer to the TB-24R's specifications
- I/O Connector: 50-pin ribbon male
- Operating temperature: 0 to 60 ºC
- Storage temperature: -20 to 80 ºC
- Relative humidity: 5 to 95%, noncondensing
- Power requirements

+5V	+12V
40 mA maximum	100 mA maximum

- Dimensions: 220 mm x 132 mm x 22 mm(WxLxH)

Ordering Information

- **TB-16P8R/12**
  Termination Board with 16-CH Isolated DI & 8-CH Relay Outputs (Including One 1.5-meter ACL-10150 Cable)
- **TB-16P8R/24**
  Termination Board with 16-CH Isolated DI & 8-CH Relay Outputs (Including One 1.5-meter ACL-10150 Cable)

TB-24

General Purpose Termination Board for DB-37 and Opto-22 Connectors

Features

- Easy connection to boards with 50-pin mating connector or 37-pin D-sub connector
- Breadboard area for custom circuit
- Two 37-pin male D-sub connectors
- Two 50-pin male mating connectors
- Screw terminals for easy field wiring
- Breadboard area: 125 mm x 73 mm
- Dimensions: 220 mm x 132 mm x 13 mm (WxLxH)

Ordering Information

- **TB-24**
  General-Purpose Termination Board with Two 37-pin D-sub Connectors and Two 50-pin Ribbon Connectors (Including One 1.5-meter ACL-10150 Cable)

DIN-24G

Termination Board for 24-CH Grayhill I/O Modules

Features

- Supports standard or miniature G5 size modules
- Termination board for installing Grayhill I/O modules
- Up to 24 modules
- Port configurable as input or output on 8-CH basis
- Dimensions: 371 mm x 126 mm x 49 mm (WxLxH)

Ordering Information

- **DIN-24G**
  Termination Board with 24-CH Grayhill I/O Modules and DIN-Rail Mounting

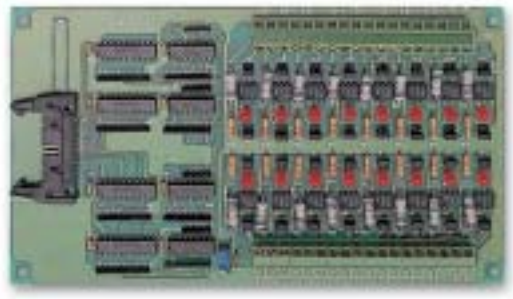
* All specifications are subject to change without further notice.

ACLD-9182A

Termination Board with 16-CH Isolated Digital Inputs

Features

- 16-CH opto-isolated digital inputs
- For use with 20-pin ribbon digital input connector of NuDAQ cards
- Non-polarity digital input range
- Isolated input voltage up to 24 V
- 5000 V_{RMS} optical isolation
- Jumper selectable for voltage input or dry-contact input mode
- LED indicator for input status
- Screw terminals for easy field wiring



Specifications

- Isolated Digital Input
  - Number of channels: 16
  - Maximum input range: 24 V, non-polarity
  - Digital logic levels
    - 0-24V, non-polarity
      - Input high voltage: 5-24 V
      - Input low voltage: 0-0.7 V
  - Input Resistance: 560 Ω @ 1 W
  - Isolation voltage: 5000 V_{RMS}
- I/O Connector: 20-pin ribbon male
- Operating temperature: 0 to 60 ºC
- Storage temperature: -20 to 80 ºC
- Relative humidity: 5 to 95%, noncondensing
- Dimensions: 205 mm x 114 mm

Ordering Information

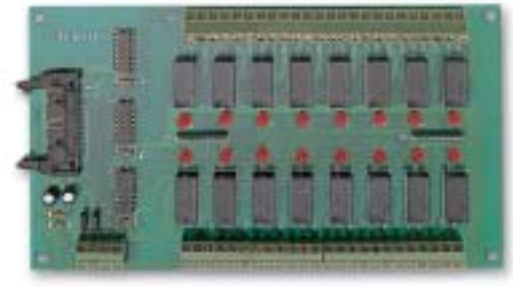
- **ACLD-9182A**
  Termination Board with 16-CH Isolated Digital Inputs (Including One 1-meter ACL-10120 Cable)

ACLD-9185

Termination Board with 16-CH Relay Outputs

Features

- 16-CH single-pole, double-throw (SPDT form C) relay outputs
- For use with 20-pin digital input connector of NuDAQ cards
- Maximum switching voltage up to 60 V_{DC}/120 V_{AC}
- Maximum switching current up to 1 $A_{DC/AC}$
- On-board relay driver circuitry
- LED indicators for relay status
- Screw terminals for easy field wiring



Specifications

- Relay Output
  - Number of channels: 16
  - Relay type: SPDT (Form C)
  - Isolation voltage: 1500 V_{RMS}
  - Contact rating
    - AC: 120 V @ 0.5 A
    - DC: 24 V @ 1 A
  - Breakdown voltage: 1000 V_{RMS}
  - Contact resistance: 100 mΩ
  - Relay ON/OFF time
    - Operate time: 6 ms
    - Release time: 3 ms
  - LED indicators for relay status: one per channel
  - Expected life
    - > 5 x 10^5 operations @ 1 A, 24 V_{DC}
    - > 2 x 10^5 operations @ 0.5 A, 120 V_{AC}
- I/O Connector: 20-pin ribbon male
- Operating temperature: 0 to 60 ºC
- Storage temperature: -20 to 80 ºC
- Relative humidity: 5 to 95%, noncondensing
- Power consumption

+5 V	+12 V
200 mA maximum	528 mA maximum

- Dimensions: 205 mm x 114 mm

Ordering Information

- **ACLD-9185**
  Termination Board with 16-CH Relay Outputs (Including One 1-meter ACL-10120 Cable)

DIN Rail Screw Terminal Boards

Features

General
- Universal screw termination boards for easy wiring
- DIN socket for easy mounting in DIN-rail

DIN-100S
Termination board with one 100-pin SCSI-II connector and DIN-rail mounting
- General purpose termination board for 100-pin SCSI-II cable
- On-board connector type: 100-pin SCSI-II female
- Shipped with 1-meter ACL-102100 cable
- Dimensions: 158 mm x 120 mm x 52 mm (WxLxH)

DIN-68S/1M, DIN-68S/1S
Termination board with one 68-pin SCSI-II connector and DIN-rail mounting
- General purpose termination board for 68-pin SCSI-II cable
- On-board connector type: 68-pin SCSI-II female
- Shipped with 1-meter ACL-10568-1 cable in DIN-68S/1M
- Shipped with 1-meter ACL-10569-1 cable in DIN-68S/1S
- Dimensions: 103 mm x 85 mm x 43 mm (WxLxH)

DIN-50S
Termination board with one 50-pin SCSI-II connector and DIN-rail mounting
- General purpose termination board for 50-pin SCSI -II cable
- On-board connector type: 50-pin SCSI-II female
- Plastic cover for protection of wiring
- Shipped with 1-meter ACL-10250 cable
- Dimensions: 125 mm x 85 mm x 50 mm (WxLxH)

DIN-502S
Two pieces of DIN-50S
- Split 100 signals of 100-pin SCSI-II connector to two DIN-50S sockets
- Shipped with 1-meter ACL-10252 cable
- Dimensions: 125 mm x 85 mm x 50 mm (WxLxH)

DIN-50P
Termination board with one 50-pin ribbon connector and DIN-rail mounting
- General purpose termination board for 50-pin ribbon flex cable
- Shipped with 1.5-meter ACL-10150-1.5 cable
- Dimensions: 146 mm x 85 mm x 55 mm (WxLxH)

DIN-37D
Termination board with one 37-pin D-sub connector and DIN-rail mounting
- General purpose termination board for D-sub 37-pin cable
- On-board connector type: 37-pin D-sub female
- Shipped with 1-meter ACL-10137-1 cable
- Dimensions: 113 mm x 85 mm x 52 mm (WxLxH)

DIN-20P
Termination board with one 20-pin ribbon connector and DIN-rail mounting
- General purpose termination board for 20-pin ribbon cable
- Shipped with 1-meter ACL-10120-1 cable
- Dimensions: 68 mm x 85 mm x 55 mm (WxLxH)

DIN-100S

DIN-68S/1M, DIN-68S/1S

DIN-50S

DIN-502S

DIN-50P

DIN-37D

DIN-20P

Ordering Information

- **DIN-100S**
  Termination Board with a 100-pin SCSI-II Connector and DIN-Rail Mounting (Including One 1-meter ACL-102100 Cable)
- **DIN-68S/1M**
  Termination Board with a 68-pin SCSI-II Connector and DIN-Rail Mounting (Including One 1-meter ACL-10568 Cable)
- **DIN-68S/1S**
  Termination Board with a 68-pin SCSI-II Connector and DIN-Rail Mounting (Including One 1-meter ACL-10569 Cable)
- **DIN-50S**
  Termination Board with a 50-pin SCSI-II Connector and DIN-Rail Mounting (Including One 1-meter ACL-10250 Cable)
- **DIN-502S**
  Two Pieces of DIN-50S Termination Board (Including One 1-meter ACL-10252 Cable)
- **DIN-50P**
  Termination Board with a 50-pin Ribbon Connector and DIN-Rail Mounting (Including One 1.5-meter ACL-10150 Cable)
- **DIN-37D**
  Termination Board with a 37-pin D-sub Connector and DIN-Rail Mounting (Including One 1-meter ACL-10137 Cable)
- **DIN-20P**
  Termination Board with a 20-pin Ribbon Connector and DIN-Rail Mounting (Including One 1-meter ACL-10120 Cable)

* All specifications are subject to change without further notice.

ACLD Screw Termination Boards

Features

General

- Low cost universal screw termination boards
- Blank pads accommodate applications such as break detection, low-pass filter, current shunt and voltage attenuator on ACLD-9881, ACLD-9178, ACLD-9188, ACLD-9138, and ACLD-8125
- Table-top mounting using nylon standoffs

ACLD-9881

General-Purpose Termination Board with One 37-pin D-sub Connector for PCI-9113A and ACL-8113A

- For use with PCI-9113A and ACL-8113
- On-board 37-pin D-sub female connector
- Reliable screw clamp termination blocks
- Shipped with one 1-meter ACL-10137 cable
- Dimensions: 222 mm x 105 mm

ACLD-9188

General-Purpose Termination Board with Two 20-pin Ribbon Connectors and One 37-pin D-sub Connector

- On-board 20-pin ribbon male connector x 2
- On-board 37-pin D-sub female connector
- Reliable screw clamp termination blocks
- Shipped with two 1-meter ACL-10120 cables
- Dimensions: 222 mm x 114 mm

ACLD-9178

General-Purpose Termination Board with Two 20-pin Ribbon Connectors

- On-board 20-pin ribbon male connector x 2
- Reliable screw clamp termination blocks
- Shipped with two 1-meter ACL-10120 Cables
- Dimensions: 103 mm x 114 mm

ACLD-9138

General-Purpose Termination Board with a 37-pin D-sub Connector

- On-board 37-pin D-sub female connector
- Blank RC circuits for analog input boards
- Reliable screw clamp termination blocks
- Shipped with one 1-meter ACL-10237 cable
- Dimensions: 103 mm x 114 mm

ACLD-9137 / ACLD-9137F

General-Purpose Termination Board with a 37-pin D-sub Connector

- ACLD-9137: on-board 37-pin D-sub male connector
- ACLD- 9137F: on-board 37-pin D-sub female connector
- Reliable screw clamp termination blocks
- Dimensions: 124 mm x 72 mm

ACLD-8125

Termination Board with a 37-pin D-sub Connector and One Cold Junction Temperature Sensor

- One on-board temperature sensor for cold-junction compensation
- Jumper selectable sensor outputs in either DI or SE mode
- On-board calibration for the temperature sensor
- On-board 37-pin D-sub female connector
- Reliable screw clamp termination blocks
- Shipped with one 1-meter ACL-10137 cable
- Dimensions: 168 mm x 114 mm

ACLD-7285

Termination Board with Two 9-pin D-sub Connectors for ACL-6128A

- For ACL-6128A analog outputs
- On-board 9-pin D-sub female connector x 2
- Reliable screw clamp termination blocks
- Shipped with two 0.3-meter 9-pin D-sub ribbon cables
- Dimensions: 115 mm x 103 mm

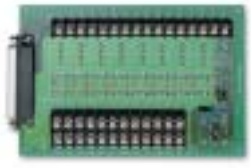
ACLD-9881

ACLD-9188

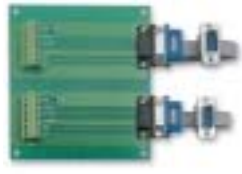
ACLD-9178

ACLD-9138

ACLD-9137/ACLD-9137F



ACLD-8125



ACLD-7285

Ordering Information

- **ACLD-9881**
  General-Purpose Termination Board with one 37-pin D-sub Connector (Including one 1-meter ACL-10137 Cable)
- **ACLD-9188**
  General-Purpose Termination Board with Two 20-pin Ribbon Connectors and One 37-pin D-sub Connector (Including Two 1-meter ACL-10120 Cables)
- **ACLD-9178**
  General-Purpose Termination Board with Two 20-pin Ribbon Connectors (Including Two 1-meter ACL-10120 Cables)
- **ACLD-9138**
  General-Purpose Termination Board with a 37-pin D-sub Connector (Including One 1-meter ACL-10237 Cable)
- **ACLD-9137**
  General-Purpose Termination Board with a 37-pin D-sub Male Connector
- **ACLD-9137F**
  General-Purpose Termination Board with a 37-pin D-sub Female Connector
- **ACLD-8125**
  Termination Board with a 37-pin D-sub Connector and One Cold Junction Temperature Sensor (Including One 1-meter ACL-10137 Cable)
- **ACLD-7285**
  Termination Board with Two 9-pin D-sub Connectors (Including two 0.3-meter 9-pin D-sub Ribbon Cables)

Cable Accessories

ACL-10120-1/2
20-Pin Flat Cable,1M/2M

ACL-10220-1/2
20 Pin Shielded & Grounded Cable,1M/2M

ACL-10232
9-Pin D-sub (RS-232) male/female Cable, 5M

ACL-10137-1/2
37-Pin D-sub male/male Cable,1M/2M

ACL-10137 MF
37-Pin D-sub male/female Cable,1M
(for ACLD-9137

ACL-10237-1
37-Pin D-sub male/male flat Cable,1M

ACL-10337
Two 20-Pin header to 37-Pin D-sub PC back panel

ACL-10437
40-Pin header to 37-Pin D-sub PC back panel
(for ACL-7225,PCI-7200)

ACL-10150-1.5
50-Pin Flat Cable,1.5M

ACL-10250
50-Pin SCSI-II Cable
(Mate with AMP-787082-5, 1M, 2M, 3M)

ACL-102100
100-Pin SCSI-II Cable (Mate with AMP-787082-9)

ACL-10252
100-Pin to 2x50-Pin Cable (for DIN-502S)

ACL-10253
100-Pin to 2x50-Pin Cable
(for PCI-7348 to DIN-24P/R)

ACL-10568-1M
68-Pin SCSI-VHDCI Cable (for DAQ-2000 Series)
(Mate with AMP-787254-1)

ACL-10537
37-Pin D-sub Assembly

ACL-105100
100-Pin SCSI-II Assembly

ACL-10550
50-Pin SCSI-II Assembly

ACL-10569-1
68-Pin SCSI Cable (Mate with AMP-787082-7)

ACL-SSI-2/3/4
SSI Bus Cable for 2/3/4 DAQ-2000 Devices

SMB-SMB-1M
1-Meter SMB to SMB Cable

SMB-BNC-1M
1-Meter SMB to BNC Cable

* All specifications are subject to change without further notice.

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ACL-10150-1.5