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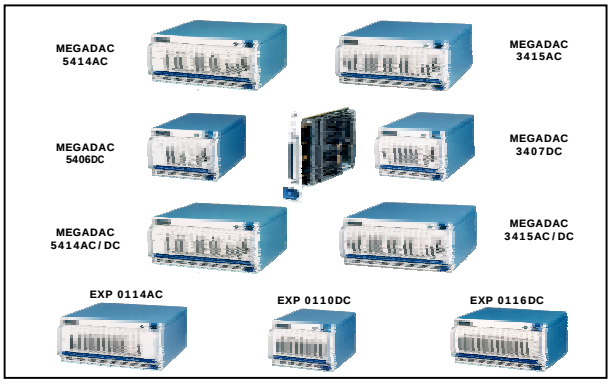
# MEGADAC
# INPUT & OUTPUT MODULES

Optim's Input and Output modules simplify the connection of your sensors and transducers eliminating the need for extra equipment since they feature on-board signal conditioning. Designed with high levels of noise immunity, each channel has an individual input amplifier to achieve higher accuracy, better inter-channel isolation, and lower temperature drifts. All modules feature input protection capable of withstanding ESD voltages up to 1000 volts without damage.

*The following pages contain specifications and accessories for various input and output modules available for the MEGADAC.*

| Input & Output Modules | Channels per Module | Excitation Type | Sample & Hold | Typical Sensor Types | Analog Outputs | Page Number |
|---|---|---|---|---|---|---|
| AD 694SH | 4 | Constant V | Yes | Strain 1/4, 1/2, Full, Any Full Bridge type | Yes | 2-3 |
| AD-1 604CHA | 4 | Charge Amp | Yes | Charge Type Sensors | Yes | 4-5 |
| AD 614IE | 4 | Constant I | Yes | Internal Electronics Sensors (LEMO) | Yes | 6-7 |
| AD 614IE | 4 | Constant I | Yes | Internal Electronics Sensors (25-Pin) | Yes | 6-7 |
| AD 624ACX | 4 | AC Voltage | Yes | AC LVDT | No | 8 |
| AD 684SH-1 | 4 | Constant V | Yes | Strain 1/4, 1/2, Full, Any Full Bridge type | No | 9-10 |
| AD-1 808FB-1 | 8 | Constant V | No | Strain 1/4, 1/2, Full, Any Full Bridge type | No | 11-12 |
| AD 808QB/120 | 8 | Constant I | No | Strain 1/4, 1/2 | No | 13-14 |
| AD 808QB/350 | 8 | Constant I | No | Strain 1/4, 1/2 | No | 15-16 |
| AD 808D-1 | 8 | None | No | Any Voltage Input | No | 17 |
| AD 816TC | 16 | None | No | Thermocouple Type E, J, K, T | No | 18 |
| DI 5032 | 1 | None | No | Digital Inputs | No | 19 |
| TM 5004 | 2/4 | None | No | Pulse, Time, Rate, Period, Frequency | No | 20 |
| IRIG-B 5000 | 1 | None | No | IRIG Time Stamp (data correlation with other devices) | No | 22 |
| AC 3884VW-1K | 8 | Special | No | Vibrating Wire | No | 23-24 |
| AC 3884VW-4K | 8 | Special | No | Vibrating Wire | No | 25-26 |
| AC 3884WM | 16 | Special | No | Water Mark | No | 27 |
| DAC 5416 | 4 | None | No | Analog Outputs for Input Modules | Yes | 29 |

| Module Accessories | Number of Channels | Typical Sensor Types | Page Number |
|---|---|---|---|
| FtoV-01 | 1 (In-Line) | Frequency to Voltage (Used In-Line with AD 684SH-1, AD 694SH, AD-1 808FB-1) | 21 |
| FtoV-05 | 1 (In-Line) | Frequency to Voltage (Used In-Line with AD 684SH-1, AD 694SH, AD-1 808FB-1) | 21 |
| FtoV-25 | 1 (In-Line) | Frequency to Voltage (Used In-Line with AD 684SH-1, AD 694SH, AD-1 808FB-1) | 21 |
| CB100 | Uses 1 Slot | Constant Voltage Excitation (Bi-polar) typically used with DC LVDT's ± 15 V | 28 |




**Input Modules Are Interchangeable Across All MEGADAC Platforms**



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# INPUT & OUTPUT MODULES
# AD 694SH

- 4 Input Channels
- 4 Independent Analog Output Channels
- Integrated Voltage Excitation, and Signal Conditioning
- ± 10 Volts Full Scale (Input & Output) (Up to ± 210 Volts)
- Computer Controlled:
  Gains from 1 to 4000,
  Sensor Excitation
  Programmable 8-pole Filter
  VCAL & Shunt CAL
  Auto Balance & Auto Zero
- Increased Balance Range
- Remote Sense for Excitation
- Full Differential Inputs
- Simultaneous Sample & Hold
- Unipolar Excitation
- Input Protection
- D-Subminiature (37) Pin Connector Kit




**AD 694SH**
**Optim Part NBR - PL2356**

Optim' s four channel AD 694SH Input & Analog Output Signal Conditioning Modules are the most versatile modules available supporting a wide range of active and passive transducers, with an optional Input Resistor Network allowing up to ± 210 Volts Full Scale on Input.

As an added value, the AD 694SH can also be used as a Signal Conditioner with balanced analog outputs (the output is after the filter & gain and before the ADC). The AD 694SH has identical signal conditioning & filtering characteristics to Optim's AD 684SH-1 modules. This on-board, integrated, Signal Conditioning satisfies requirements for Strain Gages, Pressure Transducers, Displacement Transducers, DC LVDT's and Load Cells.

As a Signal Conditioner the AD 694SH's outputs can support real-time simulator servo controllers, control stands, scopes, chart recorders & other monitoring channels.

The flexibility of the AD 694SH module is due to its computer controlled functionality. Computer controlled functions provide quicker setups during installation and completely eliminate the chance of error caused by misplaced jumper settings.

The computer controlled features provided by the AD 694SH module include selections for gains up to 4,000:1, voltage calibration, shunt cal, filtering, Auto Balance, Auto Zero, Signal Conditioning, and Constant Voltage Excitation.

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ☑ **Acceleration**
- ☑ **Analog Voltage**
- ❑ Angular Displacement
- ☑ **Capacitive Sensors**
- ❑ Charge Mode Transducers
- ☑ **Current Sensors**
- ☑ **Conditioned Signal Measurements**
- ❑ Digital Bit Stream Inputs
- ☑ **Displacement**
- ☑ **Distance**
- ☑ **Engine Performance Monitoring**
- ☑ **Excitation (Unipolar)**
- ❑ Excitation (Bipolar)
- ☑ **Flow Meters**
- ☑ **Force Transducers**
- ☑ **Frequency (Using InLine F to V)**
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ☑ **Level Sensors**
- ☑ **Load Cells**
- ❑ LVDT's (AC)
- ☑ **LVDT's (DC)**
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ☑ **Position Transducers**
- ☑ **Power**
- ☑ **Pressure**
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ☑ **Resistive Sensors**
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ☑ **Strain Gages 1/4 Bridge**
- ☑ **Strain Gages 1/2 Bridge**
- ☑ **Strain Gages Full Bridge**
- ☑ **String Pots**
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ☑ **Torque Sensors**
- ❑ Totalizer
- ☑ **Velocity**
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ☑ **Voltage Measurements**
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ☑ **Analog Output**
- ☑ **DAC Playback with DAC 5416**
- ☑ **Controller Test Stands**
- ☑ **Real-Time Monitoring**
- ☑ **Signal Conditioning for External Devices such as Simulator Servo Controllers**



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# AD 694SH
# Specifications & Accessories

## Optim Part NBR - PL2356

| | |
|---|---|
| **INPUT** | |
| Number of input channels | 4 channels/module |
| Input impedance | > 100 MOhms |
| Full-scale input voltage | ± 10 V |
| (Optional Input Resistor Network) | ± 210 V |
| Input protection | ± 50 V continuous, brief surges to 1000 V |
| Common mode range | ± 10 V |
| Common mode rejection (DC to 60 Hz) | > 80 dB (gains 1 to 8)<br>> 96 dB (gains 10 to 80)<br>> 105 dB (gains 100 to 4000) |
| Input noise | 0.2 µV p-p at 0.1 to 10 Hz |
| Offset (RTO) | < 5 mV + 2 µV x gain |
| Offset tempco (RTI) | 30 µV/°C (gains 1 to 8),<br>3 µV/°C (gains 10 to 80),<br>0.3 µV/°C (gains 100 to 800),<br>0.15 µV/°C (gains 1000 to 4000) |
| **GAIN** | |
| Gain steps | 1, 2, 4, 8, 10, 20, 40, 80, 100, 200, 400, 800, 1000, 2000, 4000 |
| Gain accuracy | 250 ppm (gains 1 to 80)<br>500 ppm (gains 10 to 800)<br>750 ppm (gains 1000 to 2000)<br>1000 ppm (gain of 4000) |
| Gain stability | 100 ppm/year |
| Gain tempco | 6 ppm/°C |
| Gain nonlinearity | 100 ppm |
| Max bandwidth | 20 KHz (-3 dB) (gains 1 to 80)<br>10 KHz (-3 dB) (gains 100 to 800)<br>1 KHz (-3 dB) (gains 1000 to 4000) |
| Slew rate | .7 V/µS |
| Settling time | 28 µS to 0.01% (gains 1 to 80)<br>140 µS to 0.01% (gain 100 to 800)<br>1300 µS to 0.01% (gain 1000 to 4000) |

| | |
|---|---|
| **BALANCE** | |
| Gains 1, 10, 100, 1000 | 50% |
| Gains 2, 20, 200, 2000 | 100% |
| Gains 4, 40, 400, 4000 | 200% |
| Gains 8, 80, 800 | 400% |
| **FILTER** | |
| Type | 8-pole Butterworth |
| Frequency | Computer controlled 1.69 Hz - 20 KHz (other ranges special) |
| Rolloff | 48 dB/octave |
| Passband | 0.1 dB |
| Stopband | 86 dB |
| Frequency accuracy | 2% of computer setting |
| Gain accuracy | 150 ppm |
| Offset (RTO) | < 5 mV |
| Offset tempco | 60 µV/°C |
| Distortion | 150 ppm |
| Nonlinearity | 300 ppm |
| Noise (RTO) | 300 µVRMS |
| **SAMPLE & HOLD** | |
| Supported | Droop 25 mV/Sec |
| **OUTPUT** | |
| Number of output channels | 4 channels/module |
| Voltage Range | ±10V (DC Single Ended) |
| Output impedance | 600 Ohms |
| **EXCITATION** | |
| Type | Constant voltage with ± sense, unipolar |
| Settings | Computer controlled +10, +5, +2, 0 volts |
| Accuracy | 400 ppm |
| Output tempco | 25 ppm/°C |
| RCAL Type (field changeable) | Resistor shunt, computer controlled, 100 KΩ |
| VCAL Type | Voltage substitution, four voltages internal/external & balance |
| **CONNECTOR** | |
| Type of connector | D-Subminiature 37-Pin |

| **STB 684/120** | |
|---|---|
| Four Channel Standard Terminal Junction Box | Optim Part NBR |
| Connector for AD 684SH-1 / AD 694SH Module | PL2333 |
| Full, 1/2, and 1/4 (120 Ohm) Bridge Completion | |
| Includes External Shunt Cal | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |

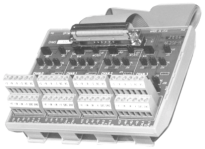
| **STB 684/350** | |
|---|---|
| Four Channel Standard Terminal Junction Box | Optim Part NBR |
| Connector for AD 684SH-1 / AD 694SH Module | PL2334 |
| Full, 1/2, and 1/4 (350 Ohm) Bridge Completion | |
| Includes External Shunt Cal | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |

| **CABLE AD694 ANALOG OUT** | |
|---|---|
| AD 694SH 37 Pin conversion cable to 4 BNC's KC39-30 (3ft (0.9m)) | Optim Part NBR |
| plus cables to 4 BNC's BENDIX PT01A-10-6S(SR) (2ft (0.6m)) | 7900021 |

| **FtoV-01** | |
|---|---|
| In-Line Frequency to Voltage Converter | Optim Part NBR |
| Provides F to V Conversion for One Channel | PL2578-01 |
| Input Frequency Range from 0Hz to 1kHz | |
| Includes Adapter Connectors & Cables | |

| **FtoV-05** | |
|---|---|
| In-Line Frequency to Voltage Converter | Optim Part NBR |
| Provides F to V Conversion for One Channel | PL2578-05 |
| Input Frequency Range from 0Hz to 5kHz | |
| Includes Adapter Connectors & Cables | |

| **FtoV-25** | |
|---|---|
| In-Line Frequency to Voltage Converter | Optim Part NBR |
| Provides F to V Conversion for One Channel | PL2578-25 |
| Input Frequency Range from 0Hz to 25kHz | |
| Includes Adapter Connectors & Cables | |



**Standard Terminal Blocks (STB)**

**In-Line Frequency to Voltage Module**

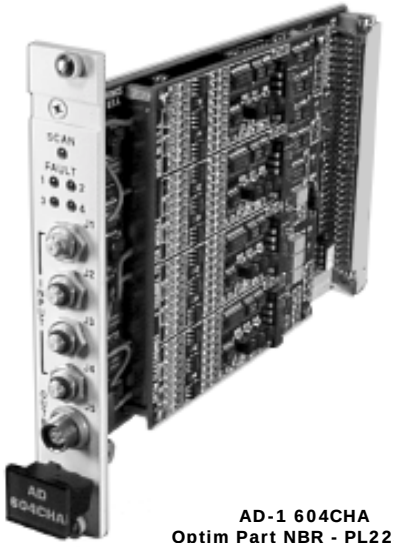





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# INPUT & OUTPUT MODULES
# AD-1 604CHA

- 4 Input Channels
- 4 Independent Analog Output Channels
- Integrated Charge Converter and Signal Conditioning
- Full Scale Input: 100 to 10,000 pC
- Typical Accelerometer Input Sensitivity: 0.3 to 300 pC/g
- Programmable Card Gains/Channel (1, 10 or 100)
- Programmable ADC Gains/Channel
- Programmable 8-pole Filter
- Simultaneous Sample & Hold
- Microdot Connectors for Inputs
- 5 Pin LEMO Connector for Outputs




**AD-1 604CHA**
**Optim Part NBR - PL2257-1**

The AD-1 604CHA four channel charge amplifier module with Analog In/Out Signal Conditioning converts high impedance charge signals from charge mode sensors into proportional low impedance voltage signals. Programmable sensitivities, sample & hold circuitry, programmable 8-pole Butterworth filters, and buffered AC outputs add to the versatility of these four channel modules.

As a Signal Conditioner, the AD-1 604CHA includes the standard MEGADAC interface, in addition to Analog outputs. These outputs can support real-time simulator servo controllers, control stands, scopes, chart recorders & other monitoring devices.

Charge amplifier input modules are generally used for piezoelectric, quartz, or any other charge mode transducer *(without built-in, charge converting electronics)* including accelerometer, pressure or force sensors.

Typical applications include dynamic force and vibration testing, pressure measurement, and transient response analysis.

Charge amp sensors work the same way as Internal Electronics Sensors (IES) except that the power supply (the IE part of an IES gage) is external to the sensor. Although smaller in size, the noise rejection is not as high as with IES gages.

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ☑ **Acceleration**
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ☑ **Charge Mode Transducers**
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ❑ Displacement
- ❑ Distance
- ☑ **Engine Performance Monitoring**
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ☑ **Force Transducers**
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ☑ **Load Cells**
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ☑ **Piezoelectric Sensors**
- ❑ Position Transducers
- ❑ Power
- ☑ **Pressure**
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ☑ **Torque Sensors**
- ❑ Totalizer
- ☑ **Velocity**
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ☑ **Analog Output**
- ☑ **DAC Playback with DAC 5416**
- ☑ **Controller Test Stands**
- ☑ **Real-Time Monitoring**
- ☑ **Signal Conditioning for External Devices such as Simulator Servo Controllers**



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# AD-1 604CHA
# Specifications & Accessories

**Optim Part NBR - PL2257-1**

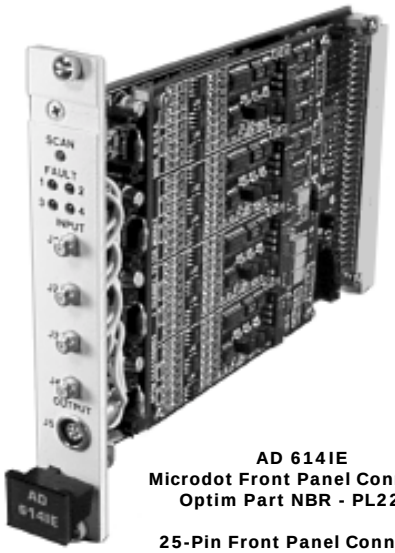
| | |
|---|---|
| **CHARGE INPUT** | |
| Number of channels | 4 channels/module |
| Full scale ranges | 100 pC, 1,000 pC, & 10,000 pC |
| Frequency response | 0.15 Hz to 20 KHz at -3 dB |
| Input mode | Single-ended, grounded |
| Connector | Micro-Dot/SMC |
| **TRANSFER CHARACTERISTICS** | |
| Sensitivity (charge mode) (Programmable) | 0.1, 1, 10 mV/pC |
| Gain Values | 1, 10, 100 (Programmable) |
| ADC Gain Values | 1, 2, 4, 8 (Programmable) |
| Accuracy | ± 0.5% (gains 1 to 8)<br>± 0.6% (gains 10 to 80)<br>± 0.9% (gains 100 to 800) |
| Temperature coefficient | ± 50 ppm/°C (gains 1 to 8)<br>± 100 ppm/°C (gains 10 to 80)<br>± 200 ppm/°C (gains 100 to 800) |
| Harmonic distortion | ± 45 ppm (gains 1 to 8)<br>± 60 ppm (gains 10 to 80)<br>± 105 ppm (gains 100 to 800) |
| Rise time | 1 V/µs |
| Recovery time | 10 µs |
| Maximum bandwidth | 20 KHz<br>(@ Sensitivity=1 mV/pC) Full Power |
| **OUTPUT** | |
| 4 channels/module | |
| Rated voltage | ±10V |
| Output impedance | 100 Ohms |
| Noise | at 0.1 to 10 Hz 6.0 µVp-p |
| Connector | 5-Pin Limo |
| **FILTER** | |
| Type | 8-pole Butterworth |
| Frequency other ranges special | Computer controlled 1.69 Hz - 20 KHz, |
| Rolloff | 48 dB/octave |
| Passband | 0.1 dB |
| Stopband | 86 dB |
| Frequency accuracy | 2% of computer setting |
| Gain accuracy | 150 ppm |
| Offset (RTO) | < 5 mV |
| Offset tempco | 60 µV/°C |
| Distortion | 150 ppm |
| Nonlinearity | 300 ppm |
| Noise (RTO) | 300 µVRMS |
| **CALIBRATION TYPES** | |
| | Voltage substitution calibration<br>(50 mV, 500 mV & 5 V) |
| **SCAN LED** | |
| | Green when channel is being scanned |
| **FAULT LED** | |
| | Latched Red when channel overloaded |
| **CONNECTOR** | LEMO 5-Pin for Output<br>Microdot for Input |



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# INPUT & OUTPUT MODULES
# AD 614IE

- 4 Input Channels
- 4 Independent Analog Output Channels
- Integrated 4mA Constant Current Power Supply, and Signal Conditioning
- Amplifies Transducer Output Voltage
- Programmable Card Gains/Channel (1, 10 or 100)
- Programmable ADC Gains/Channel
- Programmable 8-pole Filter
- Simultaneous Sample & Hold
- Connector Alternatives:
  - AD 614IE (PL2256)
    Microdot Connectors for Inputs
    5 Pin LEMO Connector for Outputs
  - AD 614IE (PL2256-1)
    D-Subminiature (25) Pin Connector Kit
    Combined for Input and Outputs




**AD 614IE**
**Microdot Front Panel Connector**
**Optim Part NBR - PL2256**

**25-Pin Front Panel Connector**
**Optim Part NBR - PL2256-1**

Optim's AD 614IE is a programmable four channel Integral Electronic Sensor (IES) power supply and amplifier, with Analog In/Out Signal Conditioning, providing large dynamic range and wide frequency bandwidth for applications using IES type accelerometer, pressure, or force transducers.

As a Signal Conditioner, the AD 614IE includes the standard MEGADAC interface, in addition to Analog outputs. These outputs can support real-time simulator servo controllers, control stands, scopes, chart recorders & other monitoring devices. Internal Electronics Sensors (IES) are sensors with a very wide bandwidth *(but no DC response)*, high noise rejection and simple cabling requirements.

IES gages differ from strain gages powered by constant current supplies in that in the IES case, the constant current supply is used to power the sensor, much like constant voltage is used to power an LVDT. Each channel includes a precision constant current power supply, a high caliber programmable amplifier, individual sample & hold, front end VCAL calibration, and a programmable 8-pole Butterworth filter.

Optim's AD 614IE input module supplies constant current excitation to piezoelectric sensors with built-in or in-line electronics and couples them to the MEGADAC for laboratory, field and factory environments. Primarily used in remote applications, such as vehicular road response studies, Optim's AD 614IE modules are factory set to supply constant current excitation to power the sensor and drive the output signal.

**TYPICAL MEASUREMENT APPLICATIONS**

- ☐ AC Operated Sensors
- ☑ **Acceleration**
- ☐ Analog Voltage
- ☐ Angular Displacement
- ☐ Capacitive Sensors
- ☐ Charge Mode Transducers
- ☐ Current Sensors
- ☐ Conditioned Signal Measurements
- ☐ Digital Bit Stream Inputs
- ☐ Displacement
- ☐ Distance
- ☑ **Engine Performance Monitoring**
- ☐ Excitation (Unipolar)
- ☐ Excitation (Bipolar)
- ☐ Flow Meters
- ☑ **Force Transducers**
- ☐ Frequency (Using InLine F to V)
- ☐ Humidity
- ☑ **Integral Electronics Sensors (IES)**
- ☐ IRIG-B Time/Date Synchronization
- ☐ Level Sensors
- ☑ **Load Cells**
- ☐ LVDT's (AC)
- ☐ LVDT's (DC)
- ☐ Moisture Content
- ☐ Monitoring Switch Closures
- ☐ Period
- ☑ **Piezoelectric Sensors**
- ☐ Position Transducers
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- ☐ Voltage Measurements
- ☐ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ☑ **Analog Output**
- ☑ **DAC Playback with DAC 5416**
- ☑ **Controller Test Stands**
- ☑ **Real-Time Monitoring**
- ☑ **Signal Conditioning for External Devices such as Simulator Servo Controllers**



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# AD 614IE
# Specifications & Accessories

**Optim Part NBR's - PL2256 & PL2256-1**

| | |
|---|---|
| **INPUT** | |
| Number of channels | 4 channels/module |
| Coupling | AC or DC (Jumper Selectable) |
| Mode | Single-ended |
| Voltage range (w/out damage) | +50, -20 V |
| Impedance | 10 µF in Series with 100 KΩ |
| AC coupling | 0.15 Hz at - 3dB |
| Input Connector | Microdot/SMC |
| **SENSOR POWER SUPPLY** | |
| Current source | 4mA |
| Compliance voltage | 23 VDC |
| Current source accuracy | ±15% |
| Noise | < 0.9 µA RMS |
| **GAIN** | |
| Gain values | 1, 10, 100 (Programmable) |
| ADC Gain values | 1, 2, 4, 8 (Programmable) |
| Accuracy | ±0.03% |
| Temperature coefficient | ±20ppm/°C |
| Harmonic distortion | < 0.05% at 1 KHz, 1 VRMS |
| Nonlinearity | ±100 ppm |
| Slew rate | .7 V/µS |
| Frequency response (AC mode) | at -3 dB |
| | 0.16 Hz to 20 KHz (gains 1 to 80) |
| | 10 KHz (gains 100 to 800) |
| **OUTPUT** | |
| 4 channels / module | |
| Rated voltage | ±10V |
| Output impedance | 100 Ohms |
| Noise | 0.707 µVRMS RTI and 200 µVRMS RTO |
| Output Connector | 5-Pin LEMO |
| **FILTER** | |
| Type | 8-pole Butterworth |
| Frequency | Computer controlled 1.69 Hz - 20 KHz, |
| other ranges special | |
| Rolloff | 48 dB/octave |
| Passband | 0.1 dB |
| Stopband | 86 dB |
| Frequency accuracy | 2% of computer setting |
| Gain accuracy | 150 ppm |
| Offset (RTO) | < 5 mV |
| Offset tempco | 60 µV/°C |
| Distortion | 150 ppm |
| Nonlinearity | 300 ppm |
| Noise (RTO) | 300 µVRMS |
| **CALIBRATION TYPES** | |
| | Voltage substitution calibration |
| **SCAN LED** | |
| | Green when any channel is being scanned |
| **FAULT LED** | |
| | Latched Red when channel encounters |
| | Overload, Short Circuit or Open Circuit |
| **CONNECTOR** | LEMO 5-Pin for Output & Microdot for Input (**Optim Part NBR PL2256**) |
| | D-Subminiature 25-Pin for both Input & Output (**Optim Part NBR PL2256-1**) |



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# INPUT MODULES
# AD 624ACX

- 4 Input Channels
- Integrated AC Voltage Excitation and Signal Conditioning
- Fixed Frequency - 2.5 KHz or 10 KHz
- 2.5 VRMS Excitation Voltage
- Programmable Card Gains/Channel (1, 10 or 100)
- Programmable ADC Gains/Channel
- Programmable 8-pole Filter
- D-Subminiature (25) Pin Mating
- Connector Kit




**AD 624ACX**
**Optim Part NBR - PL2258**

The AD 624ACX four channel analog input modules provide AC voltage excitation, programmable amplification and filtering for AC operated sensors, such as LVDT's.

Two fixed frequencies (2.5 KHz or 10 KHz) at 2.5 VRMS excitation are available.

# Specifications

| | | | |
|---|---|---|---|
| **INPUT** | | **FILTER** | |
| Number of channels | 4 channels/module | Type | 8-pole Butterworth |
| | | Frequency | Computer controlled 1.69 Hz - 20 KHz, other ranges special |
| **GAIN** | | | |
| Gain values | 1, 10, 100 (Programmable) | Rolloff | 48 dB/octave |
| ADC Gain values | 1, 2, 4, 8 (Programmable) | Passband | 0.1 dB |
| Accuracy | ±0.25% | Stopband | 86 dB |
| Temperature coefficient | ±20ppm/°C | Frequency accuracy | 2% of computer setting |
| Nonlinearity | ±500 ppm | Gain accuracy | 150 ppm |
| Frequency response (AC mode) | | Offset (RTO) | < 5 mV |
| | DC to 250 KHz with 2.5 KHz Excitation | Offset tempco | 60 µV/°C |
| | DC to 1000 KHz with 10 KHz Excitation | Distortion | 150 ppm |
| Gain Tempco | 100ppm/°C | Nonlinearity | 300 ppm |
| Offset Drift | 200ppm/°C | Noise (RTO) | 300 µVRMS |
| **CONNECTOR** | 25-pin D | **FAULT LED** | Latched Red when channel overloaded |
| **EXCITATION** | 2.5 VRMS | **SCAN LED** | Green when channel is being scanned |
| **CALIBRATION TYPES** | AC Voltage substitution | **CONNECTOR** | D-Subminiature 25-Pin |

**TYPICAL MEASUREMENT APPLICATIONS**

- ☑ **AC Operated Sensors**
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ☑ **Displacement**
- ☑ **Distance**
- ❑ Engine Performance Monitoring
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ❑ Force Transducers
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ☑ **LVDT's (AC)**
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



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# INPUT MODULES
# AD 684SH-1

- 4 Independent Analog Output Channels
- Integrated Voltage Excitation, and Signal Conditioning
- ± 10 Volts Full Scale (Input & Output) (Up to ± 210 Volts)
- Computer Controlled:
  Gains from 1 to 4000,
  Sensor Excitation
  Programmable 8-pole Filter
  VCAL & Shunt CAL
  Auto Balance & Auto Zero
- Increased Balance Range
- Remote Sense for Excitation
- Full Differential Inputs
- Simultaneous Sample & Hold
- Unipolar Excitation
- Input Protection
- D-Subminiature (37) Pin Connector Kit



**AD 684SH-1**
**Optim Part NBR - PL2269-1**

Optim's four channel AD 684SH-1 input modules with on-board integrated Signal Conditioning support a wide range of active and passive transducers such as Strain Gages, Pressure Transducers, Displacement Transducers, DC LVDT's and Load Cells.

The AD 684SH-1 modules flexibility is due to its computer controlled functionality.

Computer controlled functions provide quicker setups during installation and completely eliminate the chance of error caused by misplaced jumper settings.

The computer controlled features provided by the AD 684SH-1 module include selections for gains up to 4,000:1, voltage calibration, shunt calibration, filtering, Auto Balance, Auto Zero, Signal Conditioning, and Constant Voltage Excitation.

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ☑ **Acceleration**
- ☑ **Analog Voltage**
- ❑ Angular Displacement
- ☑ **Capacitive Sensors**
- ❑ Charge Mode Transducers
- ☑ **Current Sensors**
- ☑ **Conditioned Signal Measurements**
- ❑ Digital Bit Stream Inputs
- ☑ **Displacement**
- ☑ **Distance**
- ☑ **Engine Performance Monitoring**
- ☑ **Excitation (Unipolar)**
- ❑ Excitation (Bipolar)
- ☑ **Flow Meters**
- ☑ **Force Transducers**
- ☑ **Frequency (Using InLine F to V)**
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ☑ **Level Sensors**
- ☑ **Load Cells**
- ❑ LVDT's (AC)
- ☑ **LVDT's (DC)**
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ☑ **Position Transducers**
- ☑ **Power**
- ☑ **Pressure**
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ☑ **Resistive Sensors**
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ☑ **Strain Gages 1/4 Bridge**
- ☑ **Strain Gages 1/2 Bridge**
- ☑ **Strain Gages Full Bridge**
- ☑ **String Pots**
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements
  E,J,K & T Type TC's
  (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ☑ **Torque Sensors**
- ❑ Totalizer
- ☑ **Velocity**
- ❑ Vibrating Wire Gages:
  Strain Gages, Load Cells & Bolts,
  Pressure Transducers, Stressmeters,
  Jointmeters, Crackmeters, Temperature
- ☑ **Voltage Measurements**
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



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# AD 684SH-1
# Specifications & Accessories

**Optim Part NBR – PL2269-1**

| | |
|---|---|
| **INPUT** | |
| Number of channels | 4 channels/module |
| Input impedance | > 100 MOhms |
| Full-scale input voltage | ± 10 V |
| (Optional Input Resistor Network) | ± 210 V |
| Input protection | ± 50 V continuous, brief surges to 1000 V |
| Common mode range | ± 10 V |
| Common mode rejection | > 80 dB (gains 1 to 8) |
| (DC to 60 Hz) | > 96 dB (gains 10 to 80) |
| | > 105 dB (gains 100 to 4000) |
| Input noise | 0.2 µV p-p at 0.1 to 10 Hz |
| Offset (RTO) | < 5 mV + 2 µV x gain |
| Offset tempco (RTI) | 30 µV/°C (gains 1 to 8) |
| | 3 µV/°C (gains 10 to 80) |
| | 0.3 µV/°C (gains 100 to 800) |
| | 0.15 µV/°C (gains 1000 to 4000) |
| **GAIN** | |
| Gain steps | 1, 2, 4, 8, 10, 20, 40, 80, 100 |
| | 200, 400, 800, 1000, 2000, 4000 |
| Gain accuracy | 250 ppm (gains 1 to 80), |
| | 500 ppm (gains 10 to 800) |
| | 750 ppm (gains 1000 to 2000), |
| | 1000 ppm (gain of 4000) |
| Gain stability | 100 ppm/year |
| Gain tempco | 6 ppm/°C |
| Gain nonlinearity | 100 ppm |
| Max bandwidth | 20 KHz (-3 dB) (gains 1 to 80) |
| | 10 KHz (-3 dB) (gains 100 to 800) |
| | 1 KHz (-3 dB) (gains 1000 to 4000) |
| Slew rate | .7 V/µS |
| Settling time | 28 µS to 0.01% (gains 1 to 80) |
| | 140 µS to 0.01% (gain 100 to 800) |
| | 1300 µS to 0.01% (gain 1000 to 4000) |
| **CONNECTOR** | D-Subminiature 37-Pin |

| | |
|---|---|
| **BALANCE** | 45% |
| **FILTER** | |
| Type | 8-pole Butterworth |
| Frequency | Computer controlled 1.69 Hz - 20 KHz |
| | (other ranges special) |
| Rolloff | 48 dB/octave |
| Passband | 0.1 dB |
| Stopband | 86 dB |
| Frequency accuracy | 2% of computer setting |
| Gain accuracy | 150 ppm |
| Offset (RTO) | < 5 mV |
| Offset tempco | 60 µV/°C |
| Distortion | 150 ppm |
| Nonlinearity | 300 ppm |
| Noise (RTO) | 300 µVRMS |
| **SAMPLE & HOLD** | |
| Supported | Droop 25 mV/Sec |
| **EXCITATION** | |
| Type | Constant voltage with ± sense, unipolar |
| Settings | Computer controlled +10, +5, +2, 0 volts |
| Accuracy | 400 ppm |
| Output tempco | 25 ppm/°C |
| RCAL Type | Resistor shunt, computer controlled |
| | 100 KΩW (field changeable) |
| VCAL Type | Voltage substitution, four voltages |
| | internal/external & balance |
| Internal Voltages | 2 V, 0.2 V, 20 mV, 2 mV |
| Accuracy | 500 ppm (gains 1 to 40), |
| | 750 ppm (gains 80 to 400), |
| | 2500 ppm (gains 800 to 4000) |
| **SCAN LED** | Green when any channel is being scanned |
| **FAULT LED** | Latched Red when channel overloaded |
| **EXCITATION LED** | Latched Red if channel encounters open or shorted excitation or sense lines |

| **STB 684/120** | |
|---|---|
| Four Channel Standard Terminal Junction Box | Optim Part NBR |
| Connector for AD 684SH-1 / AD 684SH-1 Module | PL2333 |
| Full, 1/2, and 1/4 (120 Ohm) Bridge Completion | |
| Includes External Shunt Cal | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |

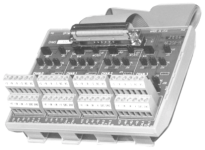
| **STB 684/350** | |
|---|---|
| Four Channel Standard Terminal Junction Box | Optim Part NBR |
| Connector for AD 684SH-1 / AD 684SH-1 Module | PL2334 |
| Full, 1/2, and 1/4 (350 Ohm) Bridge Completion | |
| Includes External Shunt Cal | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |

| **CABLE AD694 ANALOG OUT** | |
|---|---|
| AD 684SH-1 37 Pin conversion cable to 4 BNC's KC39-30 (3ft (0.9m)) | Optim Part NBR |
| plus cables to 4 BNC's BENDIX PT01A-10-6S(SR) (2ft (0.6m)) | 7900021 |

| **FtoV-01** | |
|---|---|
| In-Line Frequency to Voltage Converter | Optim Part NBR |
| Provides F to V Conversion for One Channel | PL2578-01 |
| Input Frequency Range from 0Hz to 1kHz | |
| Includes Adapter Connectors & Cables | |

| **FtoV-05** | |
|---|---|
| In-Line Frequency to Voltage Converter | Optim Part NBR |
| Provides F to V Conversion for One Channel | PL2578-05 |
| Input Frequency Range from 0Hz to 5kHz | |
| Includes Adapter Connectors & Cables | |

| **FtoV-25** | |
|---|---|
| In-Line Frequency to Voltage Converter | Optim Part NBR |
| Provides F to V Conversion for One Channel | PL2578-25 |
| Input Frequency Range from 0Hz to 25kHz | |
| Includes Adapter Connectors & Cables | |



**Standard Terminal Blocks (STB)**

**In-Line Frequency to Voltage Module**






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# INPUT MODULES
# AD-1 808FB-1

- 8 Input Channels
- Integrated Voltage Excitation, and Signal Conditioning
- Full Differential Inputs
- Individual Card Gains/Channel (1 or 100)
- Programmable ADC Gains/Channel
- Three Pole Selectable Filter (100 Hz Default)
- 3 Constant Unipolar Voltage Sources (2, 5 or 10) with Remote Sense
- RCAL, VCAL and BAL
- Input Protection
- D-Subminiature (37) Pin Mating Connector Kit



**AD-1 808FB-1**
**Optim Part NBR - PL2246**

For ¼, ½ & Full Bridge configurations, Optim's **AD-1 808FB-1** Differential Input Modules accept signals directly from virtually all Active and Passive Transducers.

The AD-1 808FB-1 modules provide signal conditioning, 3 selectable voltage excitation levels, anti-alias filtering, and have two selectable gain settings (1 or 100) per channel. This gain in conjunction with the MEGADAC's Programmable ADC converters gain, produces a maximum system gain of 3,200:1.

# Specifications

| | | | |
|---|---|---|---|
| **INPUT** | | **GAIN** | |
| Number of channels | 8 channels/module | Gain | Selectable as 1 or 100 |
| Input impedance | > 20 MOhms min. | Gain accuracy | 300 ppm max at 25°C |
| FS input voltage | ± 10 V at Gain = 1 | Gain stability | 100 ppm/year |
| | ± 0.2 at Gain = 100 | Gain tempco | 50 ppm/°C max |
| Input protection | ± 50 V continuous, | Gain linearity | 40 ppm max |
| | brief surges to 1000 V | Max bandwidth | 2 KHz (-3 dB) Full Power |
| Common mode range | ± 13 V min. | **RCAL-VCAL-BAL-ZERO** | |
| Common mode rejection | >95 dB DC to 60 Hz | RCAL | Shunt Cal 100 KΩ resistor |
| | at gain = 100 | VCAL | Voltage substitution calibration |
| Input noise RTI | 1.8 µV RMS max | | 50 mV and 5 V |
| | 0.1 to 80 Hz at gain = 1 | BAL | Removes sensor offsets |
| Offset RTI | < 300 µV balanced to 0 | ZERO | <5 µV |
| Offset tempco (RTI) | 2 µV/°C max | **VOLTAGE EXCITATION** | |
| **FILTER** | | Voltage | Selectable as 10, 5, or 2 |
| Type | 3-pole active Butterworth | Current | Two sources at 180 mA each |
| Frequency | 100 Hz as shipped, can be changed | Current Limit | automatic at 200 mA per source |
| Slew Rate | 1.2 V/µS | | Red LED fault indicator |
| | | Accuracy | 400 ppm max (remote sense at 25 °C) |
| | | Tempco | 50 ppm/°C max |
| | | **CONNECTOR** | D-Subminiature 37-Pin |

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ☑ **Acceleration**
- ☑ **Analog Voltage**
- ❑ Angular Displacement
- ☑ **Capacitive Sensors**
- ❑ Charge Mode Transducers
- ☑ **Current Sensors**
- ☑ **Conditioned Signal Measurements**
- ❑ Digital Bit Stream Inputs
- ☑ **Displacement**
- ☑ **Distance**
- ☑ **Engine Performance Monitoring**
- ☑ **Excitation (Unipolar)**
- ❑ Excitation (Bipolar)
- ☑ **Flow Meters**
- ☑ **Force Transducers**
- ☑ **Frequency (Using InLine F to V)**
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ☑ **Level Sensors**
- ☑ **Load Cells**
- ❑ LVDT's (AC)
- ☑ **LVDT's (DC)**
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ☑ **Position Transducers**
- ☑ **Power**
- ☑ **Pressure**
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ☑ **Resistive Sensors**
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ☑ **Strain Gages 1/4 Bridge**
- ☑ **Strain Gages 1/2 Bridge**
- ☑ **Strain Gages Full Bridge**
- ☑ **String Pots**
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ☑ **Torque Sensors**
- ❑ Totalizer
- ☑ **Velocity**
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ☑ **Voltage Measurements**
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



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# AD-1 808FB-1 Accessories

| STB 808FB/120 | |
|---|---|
| Eight Channel Standard Terminal Junction Box | Optim Part NBR |
| Connector For AD-1 808FB-1 Module | PL2249 |
| ½ & ¼ (120)Ohm Bridge Completion | |
| Includes External Shunt Cal | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |

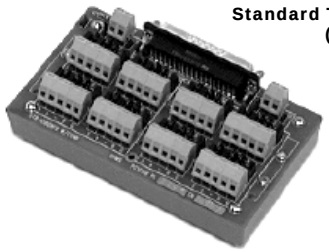
| STB 808FB/350 | |
|---|---|
| Eight Channel Standard Terminal Junction Box | Optim Part NBR |
| Connector For AD-1 808FB-1 Module | PL2251 |
| ½ & ¼ (350)Ohm Bridge Completion | |
| Includes External Shunt Cal | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |

| STB CB100/AD 808 | |
|---|---|
| Eight Channel Standard Terminal Junction Box | Optim Part NBR |
| for CB100 Module for Signal Conditioning | PL2255 |
| of +/- 15 Volts Bi-Polar Excitation | |
| Transducers, such as LVDT's | |
| Connector for AD 808D-1 or AD-1 808FB-1 Module | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |

| FtoV-01 | |
|---|---|
| In-Line Frequency to Voltage Converter | Optim Part NBR |
| Provides F to V Conversion for One Channel | PL2578-01 |
| Input Frequency Range from 0Hz to 1kHz | |
| Includes Adapter Connectors & Cables | |

| FtoV-05 | |
|---|---|
| In-Line Frequency to Voltage Converter | Optim Part NBR |
| Provides F to V Conversion for One Channel | PL2578-05 |
| Input Frequency Range from 0Hz to 5kHz | |
| Includes Adapter Connectors & Cables | |

| FtoV-25 | |
|---|---|
| In-Line Frequency to Voltage Converter | Optim Part NBR |
| Provides F to V Conversion for One Channel | PL2578-25 |
| Input Frequency Range from 0Hz to 25kHz | |
| Includes Adapter Connectors & Cables | |



**Standard Terminal Block (STB)**




**In-Line Frequency to Voltage Module**



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# INPUT MODULES
# AD 808QB/120

- 8 Input Channels
- Integrated Constant Current Excitation, and Strain Gage Signal Conditioning
- Full Differential Inputs
- Individual Card Gain of 100 per Channel
- Programmable ADC Gains/Channel
- Three Pole Selectable Filter (100 Hz Default)
- 4 or 10 mA Current Sources
- Quarter Bridge Completion/Channel (120 Ohm)
- RCAL, VCAL and BAL
- Input Protection
- D-Subminiature (37) Pin Mating Connector Kit



**AD-1 808QB/120**
**Optim Part NBR - PL2163**

Optim's AD 808QB/120 Strain Gage Modules are designed exclusively for ¼ & ½ bridge strain gage measurements, providing strain gage signal conditioning with constant current excitation, on-board 120 Ohm bridge completion, anti-alias filtering, and programmable ADC gains up to 3,200:1.

Each channel forces a constant current through the transducer, thus eliminating signal losses due to wiring lengths and resistance's.

Constant current excitation provides the maximum output in terms of output voltage per input strain (µVolts/µe), and the highest linearity in terms of output voltage per input resistance change.

Constant current also provides the lowest sensitivity to active noise levels, such as electrostatic and electromagnetic fields, and passive noise levels, which are found in lead wires, switches, slip-ring resistance's and their changes with time and temperature.

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ❑ Displacement
- ❑ Distance
- ❑ Engine Performance Monitoring
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ❑ Force Transducers
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ☑ **RTD's**
- ❑ RVDT's
- ❑ Speed Sensors
- ☑ **Strain Gages 1/4 Bridge**
- ☑ **Strain Gages 1/2 Bridge**
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ☑ **Thermistors**
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



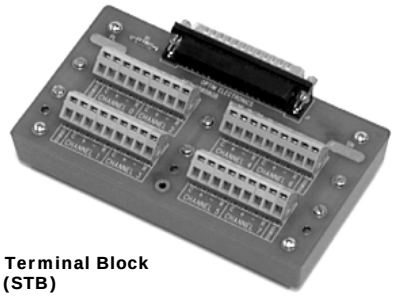
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# AD 808QB/120
# Specifications & Accessories

**Optim Part NBR – PL2163**

| | |
|---|---|
| **INPUT** | |
| 8 channels/module | |
| Input impedance | > 100 MOhms min. |
| FS input voltage | ± 0.1 V |
| Input protection | ± 15 V continuous, |
| brief surges to 1000 V | |
| Common mode range | 0 to 7 v at 10 mA, |
| 0 to 10 v at 4 mA | |
| Common mode rejection | >110 dB at 80 Hz |
| Input noise RTI | 0.8 µV RMS max < 80 Hz |
| Offset RTI | < 125 µV balanced to 0 |
| Offset tempco (RTI) | 0.6 µV/°C max |
| **GAIN** | |
| Gain | 100 |
| Gain accuracy | 200 ppm typical, 500 ppm max |
| Gain stability | 70 ppm/year |
| Gain tempco | 5 ppm/°C |
| Gain linearity | 10 ppm max |
| Max bandwidth | 12 KHz full power, 24 KHz small signal |
| Slew rate | 1.2 V/µS |
| **FILTER** | |
| Type | 3-pole active Butterworth |
| Frequency | 100 Hz as shipped, |
| can be easily changed | |
| **RCAL-VCAL-BAL-ZERO** | |
| RCAL | Shunt Cal 100 KΩ resistor (field changeable) |
| VCAL | Voltage substitution calibration 50 mV |
| BAL | Removes sensor offsets |
| ZERO | <5 µV after BAL |
| **CURRENT EXCITATION** | |
| Current | Selectable as 4 or 10 mA |
| Compliance | 0-7 V at 10 mA, 0-10 V at 4 mA |
| Accuracy | 500 ppm max |
| Tempco | 3 ppm/°C track max |
| **QUARTER BRIDGE COMPLETION** | |
| Value | 120 Ohms ±0.01% 2 ppm/°C |
| **CONNECTOR** | D-Subminiature 37-Pin |

| **STB 808QB** | |
|---|---|
| Eight Channel Standard Terminal Junction Box | Optim Part NBR |
| Connector For AD 808QB/120 Module | PL2113 |
| Includes External Shunt Cal | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |



**Standard Terminal Block (STB)**



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# INPUT MODULES
# AD 808QB/350

- 8 Input Channels
- Integrated Constant Current Excitation, and Strain Gage Signal Conditioning
- Full Differential Inputs
- Individual Card Gain of 100 per Channel
- Programmable ADC Gains/Channel
- Three Pole Selectable Filter (100 Hz Default)
- 4 or 10 mA Current Sources
- Quarter Bridge Completion/Channel (350 Ohm)
- RCAL, VCAL and BAL
- Input Protection
- D-Subminiature (37) Pin Mating Connector Kit



**AD-1 808QB/350**
**Optim Part NBR - PL1921**

Optim's AD 808QB/350 Strain Gage Modules are designed exclusively for ¼ & ½ bridge strain gage measurements, providing strain gage signal conditioning with constant current excitation, on-board 350 Ohm bridge completion, anti-alias filtering, and programmable ADC gains up to 3,200:1.

Each channel forces a constant current through the transducer, thus eliminating signal losses due to wiring lengths and resistance's.

Constant current excitation provides the maximum output in terms of output voltage per input strain (µVolts/µe), and the highest linearity in terms of output voltage per input resistance change.

Constant current also provides the lowest sensitivity to active noise levels, such as electrostatic and electromagnetic fields, and passive noise levels, which are found in lead wires, switches, slip-ring resistance's and their changes with time and temperature.

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ❑ Displacement
- ❑ Distance
- ❑ Engine Performance Monitoring
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ❑ Force Transducers
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ☑ **RTD's**
- ❑ RVDT's
- ❑ Speed Sensors
- ☑ **Strain Gages 1/4 Bridge**
- ☑ **Strain Gages 1/2 Bridge**
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ☑ **Thermistors**
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



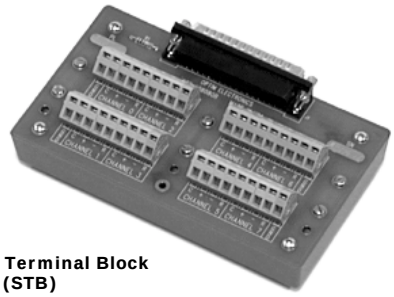
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# AD 808QB/350
# Specifications & Accessories

**Optim Part NBR – PL1921**

| | |
|---|---|
| **INPUT** | |
| 8 channels/module | |
| Input impedance | > 100 MOhms min. |
| FS input voltage | ± 0.1 V |
| Input protection | ± 15 V continuous, |
| brief surges to 1000 V | |
| Common mode range | 0 to 7 v at 10 mA, |
| 0 to 10 v at 4 mA | |
| Common mode rejection | >110 dB at 80 Hz |
| Input noise RTI | 0.8 µV RMS max < 80 Hz |
| Offset RTI | < 125 µV balanced to 0 |
| Offset tempco (RTI) | 0.6 µV/°C max |
| **GAIN** | |
| Gain | 100 |
| Gain accuracy | 200 ppm typical, 500 ppm max |
| Gain stability | 70 ppm/year |
| Gain tempco | 5 ppm/°C |
| Gain linearity | 10 ppm max |
| Max bandwidth | 12 KHz full power, 24 KHz small signal |
| Slew rate | 1.2 V/µS |
| **FILTER** | |
| Type | 3-pole active Butterworth |
| Frequency | 100 Hz as shipped, |
| | can be easily changed |
| **RCAL-VCAL-BAL-ZERO** | |
| RCAL | Shunt Cal 100 KΩ resistor (field changeable) |
| VCAL | Voltage substitution calibration 50 mV |
| BAL | Removes sensor offsets |
| ZERO | <5 µV after BAL |
| **CURRENT EXCITATION** | |
| Current | Selectable as 4 or 10 mA |
| Compliance | 0-7 V at 10 mA, 0-10 V at 4 mA |
| Accuracy | 500 ppm max |
| Tempco | 3 ppm/°C track max |
| **QUARTER BRIDGE COMPLETION** | |
| Value | 350 Ohms ±0.01% 2 ppm/°C |
| **CONNECTOR** | D-Subminiature 37-Pin |

| **STB 808QB** | |
|---|---|
| Eight Channel Standard Terminal Junction Box | Optim Part NBR |
| Connector For AD 808QB/350 Module | PL2113 |
| Includes External Shunt Cal | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |



**Standard Terminal Block (STB)**



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# INPUT MODULES
# AD 808D-1

- 8 Input Channels
- Full Differential Inputs
- Individual Card Gains/Channel (1 or 100)
- Programmable ADC Gains/Channel
- Three Pole Selectable Filter (100 Hz Default)
- VCAL and BAL
- Input Protection
- D-Subminiature (37) Pin Mating Connector Kit

Optim's AD 808D-1 Differential Input Modules accept signals directly from Voltage or other pre-conditioned Transducers and include anti-alias filtering.



**AD 808D-1**
**Optim Part NBR - PL2250**

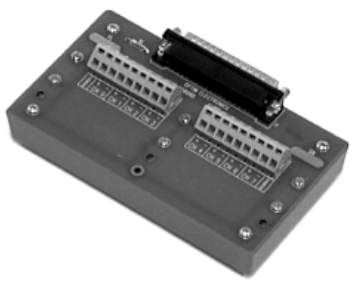
Each module has two selectable gain settings (1 or 100) per channel. This gain in conjunction with the MEGADAC's Programmable ADC gain can produce a maximum system gain of 3,200:1.

## Specifications & Accessories

| | | | |
|---|---|---|---|
| **INPUT** | | **GAIN** | |
| Number of channels | 8 channels/module | Gain | Selectable as 1 or 100 |
| Input impedance | > 20 MOhms min. | Gain accuracy | 300 ppm max at 25°C |
| FS input voltage | ± 10 V at Gain = 1 | Gain stability | 100 ppm/year |
| ± 0.2 at Gain = 100 | | Gain tempco | 50 ppm/°C max |
| Input protection | ± 50 V continuous, | Gain linearity | 40 ppm max |
| brief surges to 1000 V | | Max bandwidth | 2 KHz (-3 dB) |
| Common mode range | ± 13 V min. | Slew rate | 1.2 V/µS |
| Common mode rejection | >95 dB DC to 60 Hz at gain = 100 | **VCAL-BAL-ZERO** | |
| Input noise RTI | 1.8 µV RMS max 0.1 to 80 Hz at gain = 1 | VCAL | Voltage substitution calibration |
| Offset RTI | < 300 µV balanced to 0 | | 50 mV and 5 V |
| Offset tempco (RTI) | 2 µV/°C max | BAL | Removes sensor offsets |
| **FILTER** | | ZERO | <5 µV |
| Type | 3-pole active Butterworth | | |
| Frequency | 100 Hz as shipped, can be easily changed | **CONNECTOR** | D-Subminiature 37-Pin |

| **STB 808D** | |
|---|---|
| Eight Channel Standard Terminal Junction Box | Optim Part NBR |
| Connector For AD 808D Module | PL22114 |
| Includes External Shunt Cal | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |

| **STB CB100/AD 808** | |
|---|---|
| Eight Channel Standard Terminal Junction Box | Optim Part NBR |
| for CB100 Module for Signal Conditioning | PL2255 |
| of +/- 15 Volts Bi-Polar Excitation | |
| Transducers, such as LVDT's | |
| Connector for AD 808D-1 or AD-1 808FB-1 Module | |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |



**Standard Terminal Block (STB)**

### TYPICAL MEASUREMENT APPLICATIONS

- ☐ AC Operated Sensors
- ☐ Acceleration
- ☑ **Analog Voltage**
- ☐ Angular Displacement
- ☐ Capacitive Sensors
- ☐ Charge Mode Transducers
- ☐ Current Sensors
- ☑ **Conditioned Signal Measurements**
- ☐ Digital Bit Stream Inputs
- ☐ Displacement
- ☐ Distance
- ☐ Engine Performance Monitoring
- ☐ Excitation (Unipolar)
- ☐ Excitation (Bipolar)
- ☐ Flow Meters
- ☐ Force Transducers
- ☐ Frequency (Using InLine F to V)
- ☐ Humidity
- ☐ Integral Electronics Sensors (IES)
- ☐ IRIG-B Time/Date Synchronization
- ☐ Level Sensors
- ☐ Load Cells
- ☐ LVDT's (AC)
- ☐ LVDT's (DC)
- ☐ Moisture Content
- ☐ Monitoring Switch Closures
- ☐ Period
- ☐ Piezoelectric Sensors
- ☐ Position Transducers
- ☐ Power
- ☐ Pressure
- ☐ Pulse Encoders
- ☐ Pulse Sensors
- ☐ Rate
- ☐ Resistive Sensors
- ☐ Rotary Transformer Torque Cell
- ☐ Rotational Speed Comparison
- ☐ RTD's
- ☐ RVDT's
- ☐ Speed Sensors
- ☐ Strain Gages 1/4 Bridge
- ☐ Strain Gages 1/2 Bridge
- ☐ Strain Gages Full Bridge
- ☐ String Pots
- ☐ System Synchronization with External IRIG Devices
- ☐ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ☐ Thermistors
- ☐ Time/Data Correlation (IRIG)
- ☐ Torque Sensors
- ☐ Totalizer
- ☐ Velocity
- ☐ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ☑ **Voltage Measurements**
- ☐ Voltage Source

### ANALOG OUTPUT APPLICATIONS

- ☐ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ☐ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ☐ Signal Conditioning for External Devices such as Simulator Servo Controllers



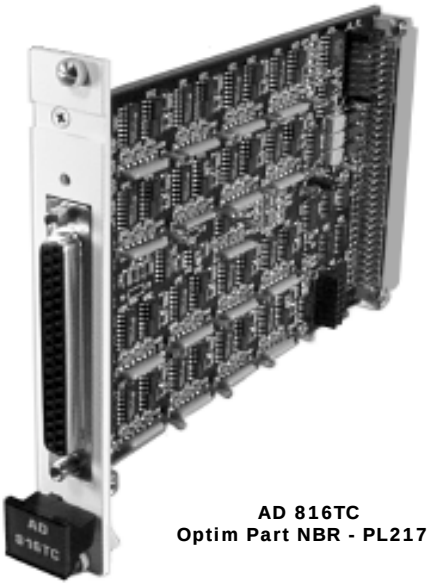
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# INPUT MODULES
# AD 816TC

- 16 Differential Thermocouple Channels
- Gain of 100 per Channel
- Programmable ADC Gain per Channel
- VCAL and BAL
- Three Pole 40 Hz Filters (Selectable)
- Input Protection
- Includes Jack Panel with Cold Junction
- Compensation and Isothermal Block

The AD 816TC connects directly to any E, J, K, or T type thermocouple. It has sixteen input channels per module, and provides a thermal compensation mass with +/- 10 volts common mode protection.

TCS for Windows provides the voltage-to-temperature linearization equations for all popular thermocouples.



**AD 816TC**
**Optim Part NBR - PL2179**

## Specifications & Accessories

| | |
|---|---|
| **INPUT** | |
| Number of channels | 16 channels/module |
| Input Impedance | >10 Meg Ohm |
| FS Input Voltage | +/- 100 mV |
| Input Protection | +/- 50 V continous<br>brief surges to 1 kV |
| Common mode range | +/- 8 V |
| Common mode rejection | > 80 dB at 60 Hz |
| Input Noise | 0.01°C < 40 Hz (0.5 µV) |
| Offset | < 0.1°C (5 µV) |
| Offset Tempco | 0.01°C/°C (0.2µV/°C) |
| **VCAL - ZERO** | |
| VCAL | Voltage substitution<br>calibration 50 mV |
| ZERO | < 5µV |
| **GAIN** | |
| Gain | 100 |
| Gain Accuracy | 300 ppm |
| Gain Stability | 100 ppm/year |
| Gain Tempco | 5 ppm/°C |
| Gain nonlinearity | 25 ppm |
| Max Bandwidth | 40 Hz (-3 dB) |
| Settling Time | 80 mS to 0.02% |
| Slew rate | 1.2 V/µS |
| **FILTER** | |
| Type | 1-pole RC on input<br>3-pole active Butterworth after gain |
| Frequency | 20 Hz as shipped |
| Gain Tempco | 10 ppm/°C |
| Offset (RTO) | < 5 mV |
| Offset Tempco(RTO) | 10 µV/°C |
| **CONNECTOR** | D-Subminiature 37-Pin |

* Measurements given in °C are based on an E type thermocouple at 60.9 µV/°C

| **JACK PANEL OPTIONS** | |
|---|---|
| Includes 10ft (3m) Cable | Optim Part NBR |
| Type E | PL2210 |
| Type J | PL2180 |
| Type K | PL2181 |
| Type T | PL2182 |
| Stand Alone or DIN Rail Mounting | |



**Jack Panel Included**
*** Please Specify Thermocouple Type (E, J, K, or T) When Ordering**

### TYPICAL MEASUREMENT APPLICATIONS

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ❑ Displacement
- ❑ Distance
- ❑ Engine Performance Monitoring
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ❑ Force Transducers
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ☑ **Temperature Measurements E,J,K & T Type TC's**
- ❑ (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ❑ Vibrating Wire Gages:
- ❑ Strain Gages, Load Cells & Bolts,
- ❑ Pressure Transducers, Stressmeters,
- ❑ Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

### ANALOG OUTPUT APPLICATIONS

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



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# INPUT MODULES
# DI 5032

- Two Independent 16 Bit Digital Input
- Channels
- TTL Compatible
- D-Subminiature (37 Pin) Mating
- Connector Kit

Optim'S DI 5032 Digital Input Module provides two 16-bit parallel input channels for connecting digital sensors and other external digital sources directly to the MEGADAC.

Inputs are TTL compatible in 2's compliment, binary, or BCD data formats.



**DI 5032**
**Optim Part NBR – PL1412**

## Specifications

| | |
|---|---|
| **INPUT** | |
| Number of Input Channels | 2 (16-Bit) channels/module |
| Input Signal Level | CMOS compatible<br>(optional TTL compatible)<br>Internal 10 KOhm pull up resistors<br>Operates with inputs of up to +/- 20 Volts |
| **CONNECTOR** | D-Subminiature 37-Pin |

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ☑ **Digital Bit Stream Inputs**
- ❑ Displacement
- ❑ Distance
- ☑ **Engine Performance Monitoring**
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ❑ Force Transducers
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ☑ **Monitoring Switch Closures**
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



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# INPUT MODULES
# TM 5004

- 2 (Two) 32 Bit or 4 (Four) 16 Bit Precision
- Counter/Timer Channels
- Measures up to 200 KHz (32 Bit) or 100 KHz (16 Bit) Independent of the MEGADAC's Scanning Rate
- Frequency, Period & Rate Measurements with 8 Selectable Time Bases
- Totalizer Measurements with Reset Capabilities:
  - Reset at the Start of Test
  - Reset after Every Measurement
  - Reset based on an External Event
- Selectable Input Gain: 1, 25, or 500
- Selectable Input Threshold: 0, 1.2, 1.8, or 2.4 V
- Input Filters for Noise Reduction
- D-Subminiature (15 Pin) Mating Connector Kit




**TM 5004**
**Optim Part NBR – PL2205**

The TM 5004 modules count time periods, frequency, pulse outputs, and other event-driven incremental occurrences. Measuring at rates independent of the MEGADAC's scanning rate, the TM 5004 can measure frequencies up to 200 kHz, periods down to 100 ns, and includes a totalizer for counting increments in excess of 1 billion. Eight computer controlled time bases are provided for frequency, period and rate measurements.

For totalizer/counter applications the TM 5004 provides internal reset capabilities, allowing you to control when the counting originates. The TM 5004 can be programmed to reset it's counters at the beginning of your test, or reset after every measurement, since it is measuring at rates independent of the MEGADAC's scanning rate. The TM 5004 can also be driven to reset based on an external event, providing you a variety of alternatives for resolving your application requirements.

# Specifications

| | |
|---|---|
| **INPUT** | |
| Number of Input channels | 4 (16 Bit) or 2 (32 Bit) channels/module |
| Input Impedance | >1 Meg Ohm |
| Input Threshold | 0, 1.2, 1.8, or 2.4 V |
| Input Hysteresis | 0.5 V after gain |
| Input Range | 10 mV to 30 V |
| Input Protection | +/- 100 V continous<br>brief surges to 1 kV |
| Input Frequency Max | 200 KHz |

| | |
|---|---|
| **TIMEBASE** | |
| Selections | 1, 10, 100 Hz<br>1, 10, 100 KHz<br>1, 10 MHz |
| Stability | 100 ppm from 0 °C to 50 °C |
| **MODES** | |
| Operating | Frequency Counter<br>Period Counter<br>Totalizer with External Reset<br>Scan Reset & Test Reset |
| **CONNECTOR** | D-Subminiature 15-Pin |

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ☑ **Angular Displacement**
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ☑ **Conditioned Signal Measurements**
- ☑ **Digital Bit Stream Inputs**
- ❑ Displacement
- ❑ Distance
- ❑ Engine Performance Monitoring
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ☑ **Flow Meters**
- ❑ Force Transducers
- ☑ **Frequency (also see FtoV module)**
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ☑ **Monitoring Switch Closures**
- ❑ Period
- ❑ Piezoelectric Sensors
- ☑ **Position Transducers**
- ❑ Power
- ❑ Pressure
- ☑ **Pulse Encoders**
- ☑ **Pulse Sensors**
- ☑ **Rate**
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ☑ **Rotational Speed Comparison**
- ❑ RTD's
- ❑ RVDT's
- ☑ **Speed Sensors**
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ☑ **Totalizer**
- ❑ Velocity
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



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# INPUT MODULES
# F to V (In-Line)

- In-Line Frequency to Voltage Module
- Input Module Used Provides:
  Excitation Source and Voltages
  Filter Frequency
- Sensitivity
  5000mV/1000Hz/10V (FtoV-1)
  5000mV/5000Hz/10V (FtoV-5)
  5000mV/25000Hz/10V (FtoV-25)




**(0 to 1 kHz) Frequency to Voltage Module**
**Optim Part NBR – PL2578-01**

**(0 to 5 kHz) Frequency to Voltage Module**
**Optim Part NBR – PL2578-05**

**(0 to 25 kHz) Frequency to Voltage Module**
**Optim Part NBR – PL2578-025**

The Frequency to Voltage Converter (FtoV) module provides a quick and user friendly way to measure a frequency to a voltage-measuring card.

The FtoV module is designed to work in-line with Optim's AD-1 808FB-1, AD 684SH-1 and AD 694SH modules. The FtoV is packaged in a metalized case with two DB9 connectors. One FtoV provides frequency to voltage conversion for one input. There are three different FtoV modules covering the frequency ranges from 0 to 1 kHz, 0 to 5 kHz, and 0 to 25 kHz.

# Specifications

| | |
|---|---|
| **FREQUENCY RANGE** | |
| Minimum | 0 Hz |
| Maximum FtoV-1 | 1 kHz |
| Maximum FtoV-5 | 5 kHz |
| Maximum FtoV-25 | 25 kHz |
| **INPUT** | |
| Amplitude Minimum | 10 mV |
| Amplitude Maximum | 30V |
| Impedance | >100k Ohms |
| **OUTPUT VOLTAGE** | 0 – 5V |
| **LINEARITY** | 1.0% of Full Scale |
| **INTERNAL CALIBRATION FREQUENCY** | |
| FtoV-1 | 512 Hz |
| FtoV-5 | 4096 Hz |
| FtoV-25 | 16,384 Hz |
| **RISE TIME/TRANSIENT RESPONSE TIME** | |
| **FtoV-1** | |
| 0Hz to 1kHz | 500 milliseconds/2Hz |
| 1kHz to 0Hz | 500 milliseconds/2Hz |
| **FtoV-5** | |
| 0Hz to 5kHz | 200 milliseconds/5Hz |
| 5kHz to 0Hz | 200 milliseconds/5Hz |
| **FtoV-25** | |
| 0Hz to 25kHz | 20 milliseconds/50Hz |
| 25kHz to 0Hz | 20 milliseconds/50Hz |
| **CONNECTOR** | D-Subminiature 9-Pin (DB9S to Sensor) (DB9P to MEGADAC) |

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ❑ Displacement
- ❑ Distance
- ❑ Engine Performance Monitoring
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ❑ Force Transducers
- ☑ **Frequency (InLine F to V)**
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements
  E,J,K & T Type TC's
  (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ❑ Vibrating Wire Gages:
  Strain Gages, Load Cells & Bolts,
  Pressure Transducers, Stressmeters,
  Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ❑ DAC Playback with DAC 5416
- ❑ Controller Test Stands
- ❑ Real-Time Monitoring
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



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# INPUT MODULES
# IRIG-B 5000

- Receives IRIG-B Time Codes For
- Synchronizing Data with Other
- Systems & Events
- Allows MEGADAC to Time Stamp Measurements with up to 10 Millisecond Resolution

The IRIG-B module is designed for applications requiring time/data correlation such as video recorders filming an event being measured, multiple system synchronization, or high accuracy time measurements.




**IRIG-B 5000**
**Optim Part NBR – PL1778**

Optim's IRIG-B module allows you to time stamp your measurements with up to 10 millisecond resolution. This time tag can then be transferred along with the data to provide a means of uniquely identifying individual sets of data points.

## Specifications

| | |
|---|---|
| **INPUT** | |
| Number of Input channels | 4 channels/module |
| Input impedance | 10 MOhms |
| Digital input voltage | 1 Vpp to 10 Vpp |
| Analog input voltage | 1 Vpp to 10 Vpp 1 KHz timecode<br>0.2 Vpp to 2 Vpp |
| Input protection | ± 50 V continuous,<br>brief surges to 1000 V |
| Resolution | 10 mSec |
| **OUTPUT** | |
| Output impedance | 100 Ohms |
| Output voltage | 5 Vpp |
| Accuracy | 0.01% |
| **CONNECTOR** | BNC |

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ❑ Displacement
- ❑ Distance
- ❑ Engine Performance Monitoring
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ❑ Force Transducers
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ☑ **IRIG-B Time/Date Synchronization**
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ☑ **Time/Data Correlation (IRIG)**
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



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# INPUT MODULES
# AD 3884VW-1K

- 8 Differential Vibrating Wire Channels
- 8 Differential Thermistor Channels
- Swept Square Wave Wire Excitation
- 450 to 1000 Hz
- FCal, F-Start, F-Stop, and Equipment Check
- 3 Pole Bandpass Wire Filter
- 100 µA Pulsed Thermistor Excitation
- VCAL, RCAL, and BAL
- 80 Hz Lowpass Thermistor Filter
- 0-50 KOhm = 0-5 V Full Scale
- Input Protection
- Includes Terminal Boxes
- D-Subminiature (37 Pin) Mating Connector Kit



**AD 3884VW-1K**
**Optim Part NBR - PL2049**

The AC 3884VW modules are designed exclusively for strain gages, pressure transducers, load cells & bolts, stressmeters, jointmeters, crackmeters, and temperature sensors measuring vibrating wire transducers.

The AC 3884VW features differential vibrating wire channels, differential thermistor channels, swept square wave wire excitation, a 3 pole bandpass wire filter, 100 µA pulsed thermistor excitation, 80 Hz lowpass thermistor filter, and 0-50 KOhm = 0-5 V full scale.

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ❑ Displacement
- ❑ Distance
- ❑ Engine Performance Monitoring
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ❑ Force Transducers
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ☑ **Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature**
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



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# AD 3884VW-1K
# Specifications & Accessories

**Optim Part NBR – PL2049**

| AC 3884VW VIBRATING WIRE SPECIFICATIONS | |
|---|---|
| **INPUT** | |
| Number of channels | 8 channels/module |
| Input impedance | > 2 MOhms |
| Input protection | -2 to +7 V continuous<br>brief surges to 1000 V |
| Common mode rejection | >80 dB min. at 60 Hz |
| Gain | 2156:1 |
| Filter Type | 3-pole Bandpass |
| Filter Frequency | 350 Hz to 6000 Hz |
| **EXCITATION** | |
| Type | Swept Square Wave low to high |
| 1K | Start 450 Hz, Stop 1000 Hz |
| Sweep duration | 350 mS |
| Wire settle duration | 50 mS |
| Clock timebase | 500, 1000, 2000, and 4000 KHz |
| Number of cycles | 32, 64, and 128 |
| **CAL-ZERO-BAL** | |
| CAL | Stop Sweep |
| FCAL | 8, 4, 2, 1 KHz and 500 Hz |
| Zero | Start Sweep |
| **CONNECTOR** | D-Subminiature 37-Pin (Shared by both) |

| AC 3884VW THERMISTOR SPECIFICATIONS | |
|---|---|
| **INPUT** | |
| Number of channels | 8 channels/module |
| Input impedance | > 2 MOhms |
| FS input voltage | 0 to +5 Volts |
| Input protection | ± 12 V continuous<br>brief surges to 1000 V |
| Offset | < 8 mV max, balanced to 0 |
| Offset tempco | 13.0 µV/°C max |
| **GAIN** | |
| Gain | 1 |
| Gain error | 250 ppm max |
| Gain stability | 100 ppm/year |
| Gain tempco | 60 ppm/°C max |
| Gain linearity | 80 ppm max |
| **EXCITATION** | |
| Type | Pulsed Constant Current |
| Value | 100 µA |
| Tolerance | 300 ppm |
| Tempco | 60 ppm/°C max |
| Voltage Range | 5 V max (50 KOhms) |
| **FILTER** | |
| Type | 3-pole Butterworth |
| Frequency | 100 Hz |
| **CAL-ZERO-BAL** | |
| CAL | 5.000 volts |
| RCAL | 50 KOhms (5.000 V) 0.01% |
| ZERO | 0.000 volts |
| **CONNECTOR** | D-Subminiature 37-Pin (Shared by both) |

| STB AC 3884VW | |
|---|---|
| Standard Terminal Block for Connections | Optim Part NBR |
| Includes 10ft (3m) Interconnecting Cable | PL2090 |



**Standard Terminal Block (STB)**



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# INPUT MODULES
# AD 3884VW-4K

- 8 Differential Vibrating Wire Channels
- 8 Differential Thermistor Channels
- Swept Square Wave Wire Excitation
- 2000 to 4000 Hz
- FCal, F-Start, F-Stop, and Equipment Check
- 3 Pole Bandpass Wire Filter
- 100 µA Pulsed Thermistor Excitation
- VCAL, RCAL, and BAL
- 80 Hz Lowpass Thermistor Filter
- 0-50 KOhm = 0-5 V Full Scale
- Input Protection
- Includes Terminal Boxes
- D-Subminiature (37 Pin) Mating Connector Kit



**AD 3884VW-4K**
**Optim Part NBR - PL2049-2**

The AC 3884VW modules are designed exclusively for strain gages, pressure transducers, load cells & bolts, stressmeters, jointmeters, crackmeters, and temperature sensors measuring vibrating wire transducers.

The AC 3884VW features differential vibrating wire channels, differential thermistor channels, swept square wave wire excitation, a 3 pole bandpass wire filter, 100 µA pulsed thermistor excitation, 80 Hz lowpass thermistor filter, and 0-50 KOhm = 0-5 V full scale.

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ❑ Displacement
- ❑ Distance
- ❑ Engine Performance Monitoring
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ❑ Force Transducers
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ☑ **Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature**
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



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# AD 3884VW-4K
# Specifications & Accessories

**Optim Part NBR – PL2049-2**

| AC 3884VW VIBRATING WIRE SPECIFICATIONS | |
|---|---|
| **INPUT** | |
| Number of channels | 8 channels/module |
| Input impedance | > 2 MOhms |
| Input protection | -2 to +7 V continuous<br>brief surges to 1000 V |
| Common mode rejection | >80 dB min. at 60 Hz |
| Gain | 2156:1 |
| Filter Type | 3-pole Bandpass |
| Filter Frequency | 350 Hz to 6000 Hz |
| **EXCITATION** | |
| Type | Swept Square Wave low to high |
| 4K | Start 2000 Hz, Stop 4000 Hz |
| Sweep duration | 350 mS |
| Wire settle duration | 50 mS |
| Clock timebase | 500, 1000, 2000, and 4000 KHz |
| Number of cycles | 32, 64, and 128 |
| **CAL-ZERO-BAL** | |
| CAL | Stop Sweep |
| FCAL | 8, 4, 2, 1 KHz and 500 Hz |
| Zero | Start Sweep |
| **CONNECTOR** | D-Subminiature 37-Pin (Shared by both) |

| AC 3884VW THERMISTOR SPECIFICATIONS | |
|---|---|
| **INPUT** | |
| Number of channels | 8 channels/module |
| Input impedance | > 2 MOhms |
| FS input voltage | 0 to +5 Volts |
| Input protection | ± 12 V continuous<br>brief surges to 1000 V |
| Offset | < 8 mV max, balanced to 0 |
| Offset tempco | 13.0 µV/°C max |
| **GAIN** | |
| Gain | 1 |
| Gain error | 250 ppm max |
| Gain stability | 100 ppm/year |
| Gain tempco | 60 ppm/°C max |
| Gain linearity | 80 ppm max |
| **EXCITATION** | |
| Type | Pulsed Constant Current |
| Value | 100 µA |
| Tolerance | 300 ppm |
| Tempco | 60 ppm/°C max |
| Voltage Range | 5 V max (50 KOhms) |
| **FILTER** | |
| Type | 3-pole Butterworth |
| Frequency | 100 Hz |
| **CAL-ZERO-BAL** | |
| CAL | 5.000 volts |
| RCAL | 50 KOhms (5.000 V) 0.01% |
| ZERO | 0.000 volts |
| **CONNECTOR** | D-Subminiature 37-Pin (Shared by both) |

| STB AC 3884VW | |
|---|---|
| Standard Terminal Block for Connections | Optim Part NBR |
| Includes 10ft (3m) Interconnecting Cable | PL2090 |



**Standard Terminal Block (STB)**



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# INPUT MODULES
# AD 3884WM

- 16 Differential Input Channels
- 100 µA Pulsed Excitation
- RCAL, VCAL and BAL
- 80 Hz Filters
- 0-50 KOhm = 0-5 V Full Scale
- Input Protection
- Includes Terminal Boxes
- D-Subminiature (37 Pin) Mating Connector Kit

Optim's AC 3884WM modules are designed exclusively for applications requiring humidity, moisture & resistive sensor measurements.



**AD 3884WM**
**Optim Part NBR - PL2050**

The AC 3884WM features differential inputs with 100 µA pulsed excitation, 80 Hz Filters, and 0-50 KOhm = 0-5 V full scale.

# Specifications

| | | | |
|---|---|---|---|
| **INPUT** | | **EXCITATION** | |
| Number of channels | 8 channels/module | Type | Pulsed AC Constant Current |
| Input impedance | > 1 MOhm differential | | 100 µA |
| Resistance to ground | 1 KΩ to -INPUT of selected channel | Tolerance | 300 ppm |
| | | Tempco | 15 ppm/°C max |
| | 22 KΩ to -INPUT not selected | Voltage Range | 5 V max (50 KOhms) |
| FS input voltage | 0 to +5 Volts | | |
| Input protection | ± 12 V continuous | **FILTER** | |
| | brief surges to 1000 V | Type | 3-pole Butterworth |
| Common mode rejection | >60 dB min. at 60 Hz | Frequency | 80 Hz as shipped |
| Offset | < 8 mV max, balanced to 0 | | |
| Offset tempco | 20.0 µV/°C max | **CAL-ZERO-BAL** | |
| **GAIN** | | CAL | 5.000 volts |
| Gain | 1 | RCAL | 50 KOhms (5.000 V) 0.01% |
| Gain error | 300 ppm max | ZERO | 0.000 volts |
| Gain stability | 100 ppm/year | | |
| Gain tempco | 60 ppm/°C max | | |
| Gain linearity | 80 ppm max | **CONNECTOR** | D-Subminiature 37-Pin |

**TYPICAL MEASUREMENT APPLICATIONS**

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ❑ Displacement
- ❑ Distance
- ❑ Engine Performance Monitoring
- ❑ Excitation (Unipolar)
- ❑ Excitation (Bipolar)
- ❑ Flow Meters
- ❑ Force Transducers
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ☑ **Moisture Content**
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

**ANALOG OUTPUT APPLICATIONS**

- ❑ Analog Output
- ☑ **DAC Playback with DAC 5416**
- ❑ Controller Test Stands
- ☑ **Real-Time Monitoring**
- ❑ Signal Conditioning for External Devices such as Simulator Servo Controllers



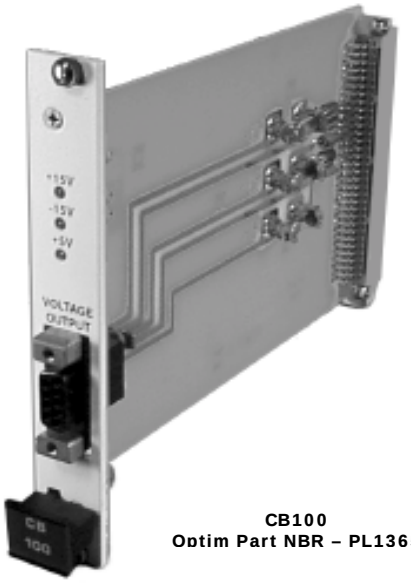
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# EXCITATION MODULES
# CB100

- Common Voltage Excitation Supply
- +5, +15 & -15 Voltage Outputs
- 250 mA Capacity
- Input Protection
  -Outputs fused at 500mA
- D-Subminiature (9 Pin) Mating Connector Kit

The CB 100 module allows access to the MEGADAC's ±15 volt and +5 volt power supplies.

With a maximum of 250 mA per supply, these modules can be used for Signal Conditioning of ±15 volt bi-polar excitation transducers, such as LVDT's.

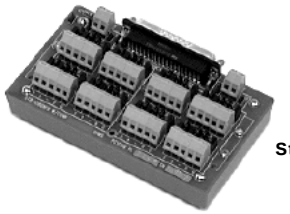



**CB100**
**Optim Part NBR – PL1365**

## Specifications & Accessories

| EXCITATION | |
|---|---|
| Number of channels | N/A uses 1 module slot |
| Voltages | +5, +15, and -15 Volts @ 250 mA each |
| Filtering | Ferrite Bead Inductors |
| Fuses | 5mm x 20 mm, 500mA (Individually Fused) |
| **DISPLAY** | |
| Type | LED Indicators |
| **CONNECTOR** | D-Subminiature 9-Pin |

| STB CB100/AD 808 | |
|---|---|
| Standard Terminal Junction Box | Optim Part NBR |
| for AD 808 Series Modules | PL2255 |
| Includes 10ft (3m) Interconnecting Cable | |
| Stand Alone or DIN Rail Mounting | |



**Standard Terminal Block (STB)**

### TYPICAL MEASUREMENT APPLICATIONS

- ❑ AC Operated Sensors
- ❑ Acceleration
- ❑ Analog Voltage
- ❑ Angular Displacement
- ❑ Capacitive Sensors
- ❑ Charge Mode Transducers
- ❑ Current Sensors
- ❑ Conditioned Signal Measurements
- ❑ Digital Bit Stream Inputs
- ❑ Displacement
- ❑ Distance
- ❑ Engine Performance Monitoring
- ☑ **Excitation (Unipolar)**
- ☑ **Excitation (Bipolar)**
- ❑ Flow Meters
- ❑ Force Transducers
- ❑ Frequency (Using InLine F to V)
- ❑ Humidity
- ❑ Integral Electronics Sensors (IES)
- ❑ IRIG-B Time/Date Synchronization
- ❑ Level Sensors
- ❑ Load Cells
- ❑ LVDT's (AC)
- ❑ LVDT's (DC)
- ❑ Moisture Content
- ❑ Monitoring Switch Closures
- ❑ Period
- ❑ Piezoelectric Sensors
- ❑ Position Transducers
- ❑ Power
- ❑ Pressure
- ❑ Pulse Encoders
- ❑ Pulse Sensors
- ❑ Rate
- ❑ Resistive Sensors
- ❑ Rotary Transformer Torque Cell
- ❑ Rotational Speed Comparison
- ❑ RTD's
- ❑ RVDT's
- ❑ Speed Sensors
- ❑ Strain Gages 1/4 Bridge
- ❑ Strain Gages 1/2 Bridge
- ❑ Strain Gages Full Bridge
- ❑ String Pots
- ❑ System Synchronization with External IRIG Devices
- ❑ Temperature Measurements E,J,K & T Type TC's (Centigrade & Fahrenheit)
- ❑ Thermistors
- ❑ Time/Data Correlation (IRIG)
- ❑ Torque Sensors
- ❑ Totalizer
- ❑ Velocity
- ❑ Vibrating Wire Gages: Strain Gages, Load Cells & Bolts, Pressure Transducers, Stressmeters, Jointmeters, Crackmeters, Temperature
- ❑ Voltage Measurements
- ❑ Voltage Source

### ANALOG OUTPUT APPLICATIONS

- ❑ Analog Output
- ❑ DAC Playback with DAC 5416
- ❑ Controller Test Stands
- ❑ Real-Time Monitoring
- ☑ **Signal Conditioning for External**
- ☑ **Devices such as Simulator**
- ☑ **Servo Controllers**



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# OUTPUT MODULES
# DAC 5416

- 4 Independent Analog Output Channels
- Real-Time Output & Signal Playback
- Variable Playback Speeds
- Programmable 8 Pole Reconstruction
- Filters
- ± 10 Volts Full Scale
- 16 Bit Resolution
- BNC Connectors



**DAC 5416**
**Optim Part NBR - PL2423**

The MEGADAC's hardware has built-in intelligence for controlling Digital-To-Analog modules, supporting real-time scopes & chart recorders.

The output signals are true recreations of the actual input signals. Both the analog output display speed and reconstruction filter frequency can be changed for Post-Test playback of recorded data.

## Specifications

| | |
|---|---|
| **OUTPUT** | |
| 4 channels/module | |
| Accuracy | +/- 0.05% |
| Linearity | +/- 1 LSB |
| Voltage Range | +/- 10 volts |
| Resolution | 312.5 microvolts |
| Dynamic Range | 86 dB |
| Calibration | +/- 32,000 counts = +/- 10 volts |
| Output Impedance | 100 Ohms |
| Filtering | 8-pole Butterworth (programmable) |
| **CONNECTOR** | BNC |

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