

DSP

H81WAB3M
R0M0TJM
ASDSASDAD
KAWTAT

DSP

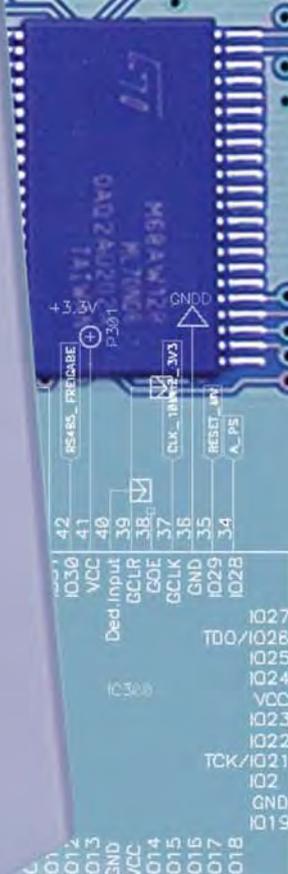
DASIM

Data Acquisition System
for Industrial Applications

DASIM

Control panel with multiple channels (1-8) for data acquisition. Each channel includes:

- ISQNA-VT0
- TRIG (A, B) buttons
- OV (Over Voltage) indicator
- WORK (Work) indicator
- COMP (Compare) indicator
- TARA A, TARA B buttons
- CAL (Calibration) indicator
- MINMAX (Min/Max) indicator
- RESET button
- U1, U2, GND terminals



IMTRON

Your Partner for Measuring
Physical Quantities

DASIM

Universal Computer Controlled Measuring System, Parameter Setting and Data Acquisition via Ethernet and RS 232 Interfaces

The amplifiers of the proven measuring system DASIM offer a extreme high functionality and performance due to the onboard DSP (digital signal processor), where each channel has its own powerful one.

The 2-channel Universal Amplifier is handling a large number of different types of sensors.

For each of the 2 channels of the amplifier, parameters can be set individually and independent from each other for any sensor you like. Measurement range, linearisation, and sensor feed can be chosen without any compromise for each type of sensor with the Imtron parameter setting software DaSoft.

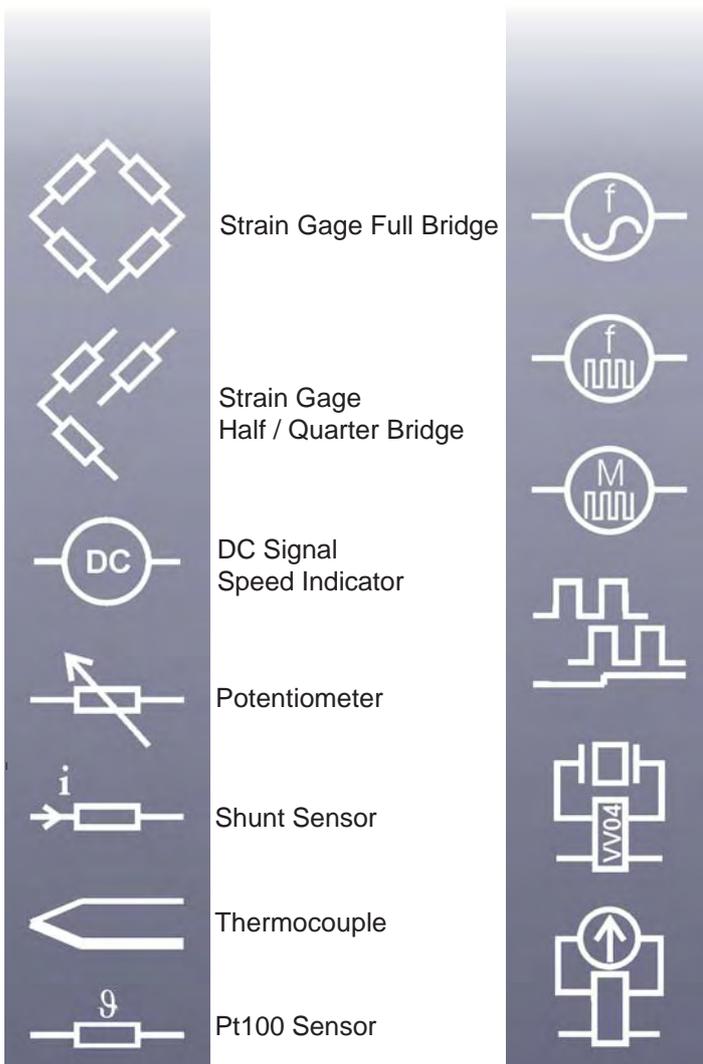
Sensor parameters can be called off from a sensor data bank for direct configuration setting of an amplifier channel.

Each channel is electrically insulated on the input side and offers matching power feed for the many types of sensors. On the output side there are two precise **analog signals** per channel. Simultaneously digitised signals are available via an internal highspeed bus at an **Ethernet** interface and to a field bus like **CAN**. Measurement signals are latched into a FIFO (256 kB, optional 1MB). Data can be also sent out individually per channel to a **CAN Bus**.

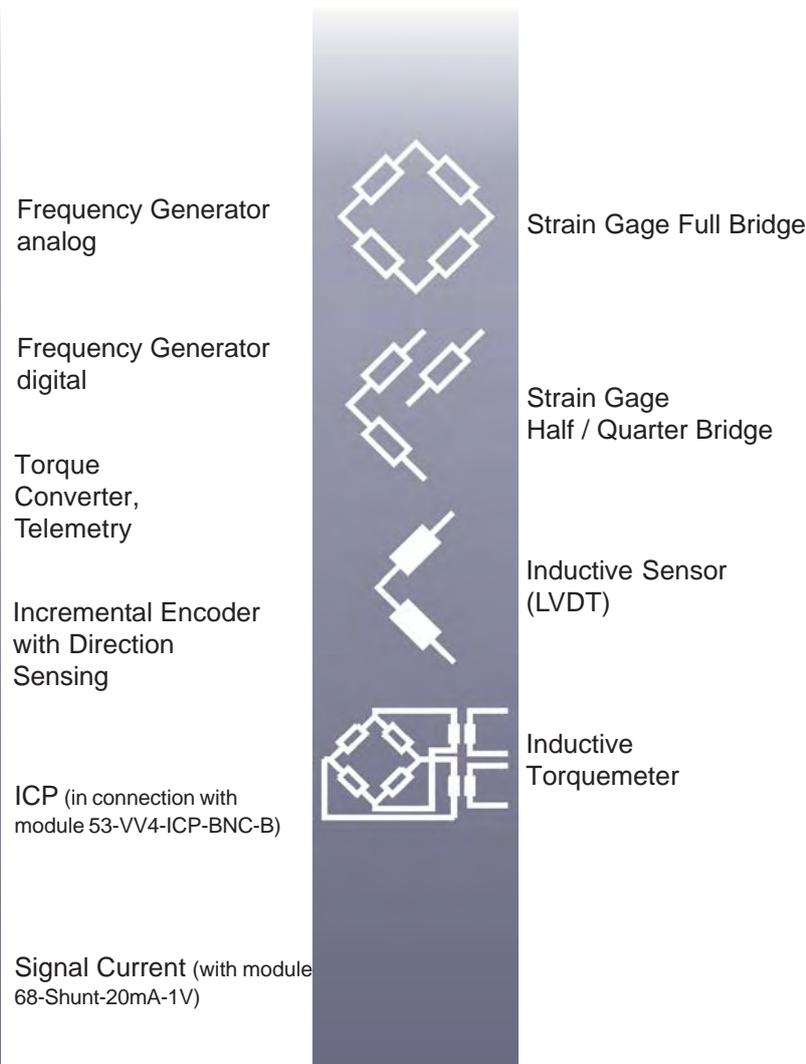
Parameter setting can be done via the RS 232 (respectively RS 485) and Ethernet interfaces.



Universal Amplifier



Carrier Frequency Amplifier





There are LEDs for trigger, overload, status and comparator functions, as well as push buttons for zero setting, calibration signal, min/max and reset. They can be locked with a manual keylock switch in the central unit of the system or by means of the parameter setting software DaSoft.

Analog output signals U1 and U2 can be monitored for a quick control via the front panel jacks.

The amplifiers are well protected themselves against mechanical and EMC influences by a rugged cassette housing.

DASIM Compact

The whole functionality of DASIM is also available with a cost effective 4- or 8-channel compact complete system for small-scale applications with or without Ethernet interface and DAC software.



Standard connector configuration at the back panel:

- 2 sensor inputs per bay
- 2 BNC outputs per bay, switch-selectable for U1 or U2 of both channels
- D Sub connector with all output signals U1 and U2
- DC-isolated RS 232 interface and remote control connector
- Ethernet Interface
- CAN Bus connector

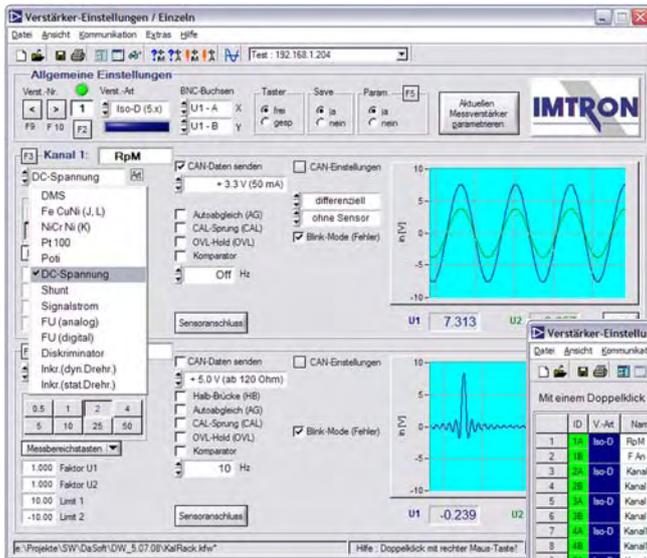


Signal acquisition: Ethernet

Analog

CAN

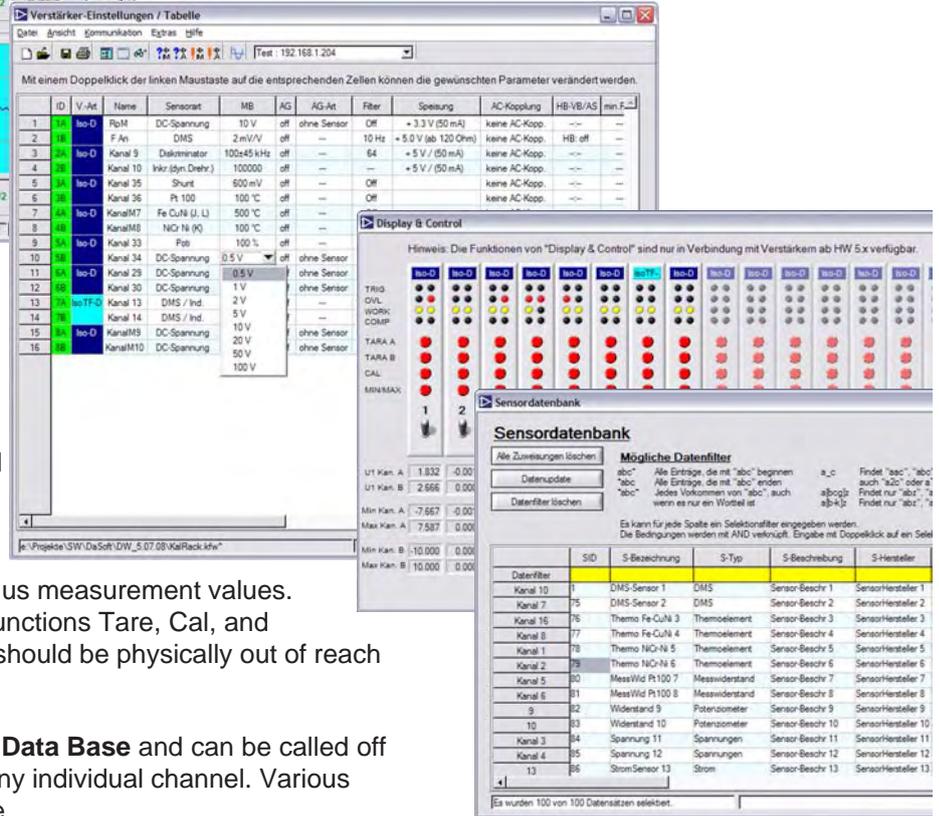
DaSoft for Parameter Setting and Sensor Data Base Linking



DaSoft

shows in **Single View** all parameters for the 2 channels of each amplifier at one glance: Type of sensor, measurement range, sensor feed, filter settings, analog output, factors, threshold values, etc..

Graphs show the actual signal curves. There are 2 numerical **Displays** informing about the actual values.



The **Tabular View** lists all parameters and all channels of the amplifiers in a clear map. Columns can be blanked out for easier overview. A report wizard helps to put out data in tabular form on the standard printer or as a Word document.

Display & Control View shows all the amplifier front panels with LEDs, buttons, plus measurement values. Here you can activate by mouse click the functions Tare, Cal, and Min/Max, which is useful when the system should be physically out of reach during a test drive, for example.

Sensor data can be deposited in a **Sensor Data Base** and can be called off for appropriate setting of parameters with any individual channel. Various data bases can be integrated in the software.

DAQSoft for Data Acquisition and Analysis

DAQSoft

is a comfortable Imtron software for data acquisition and analysis. All measurement data can be displayed online simultaneously as graphs or tables. Besides measurement over time, X/Y as well as quasi-stationary measurement can be performed.

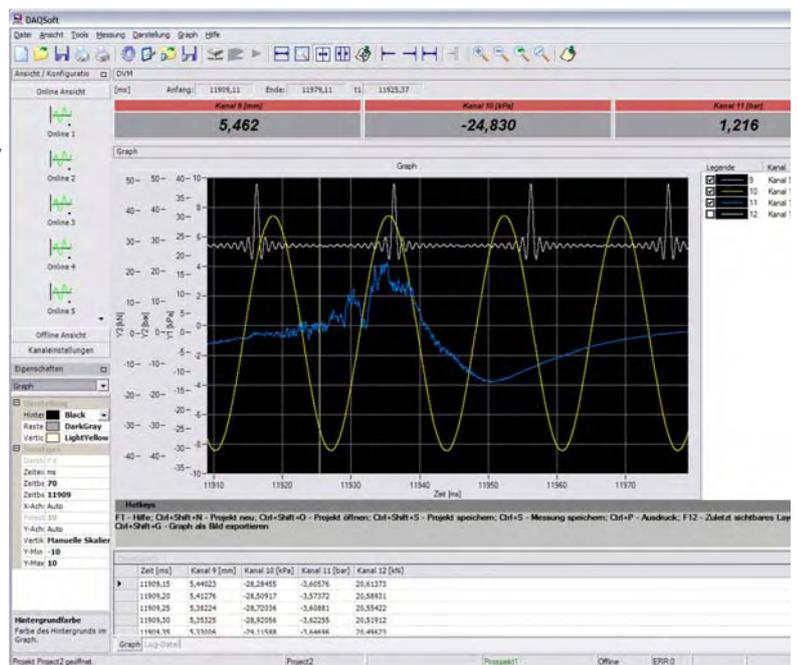
A **Log File** gives detailed information about the course of the measurement project.

Comprehensive **Tools** for control, editing, and documentation of stored data are built in like:

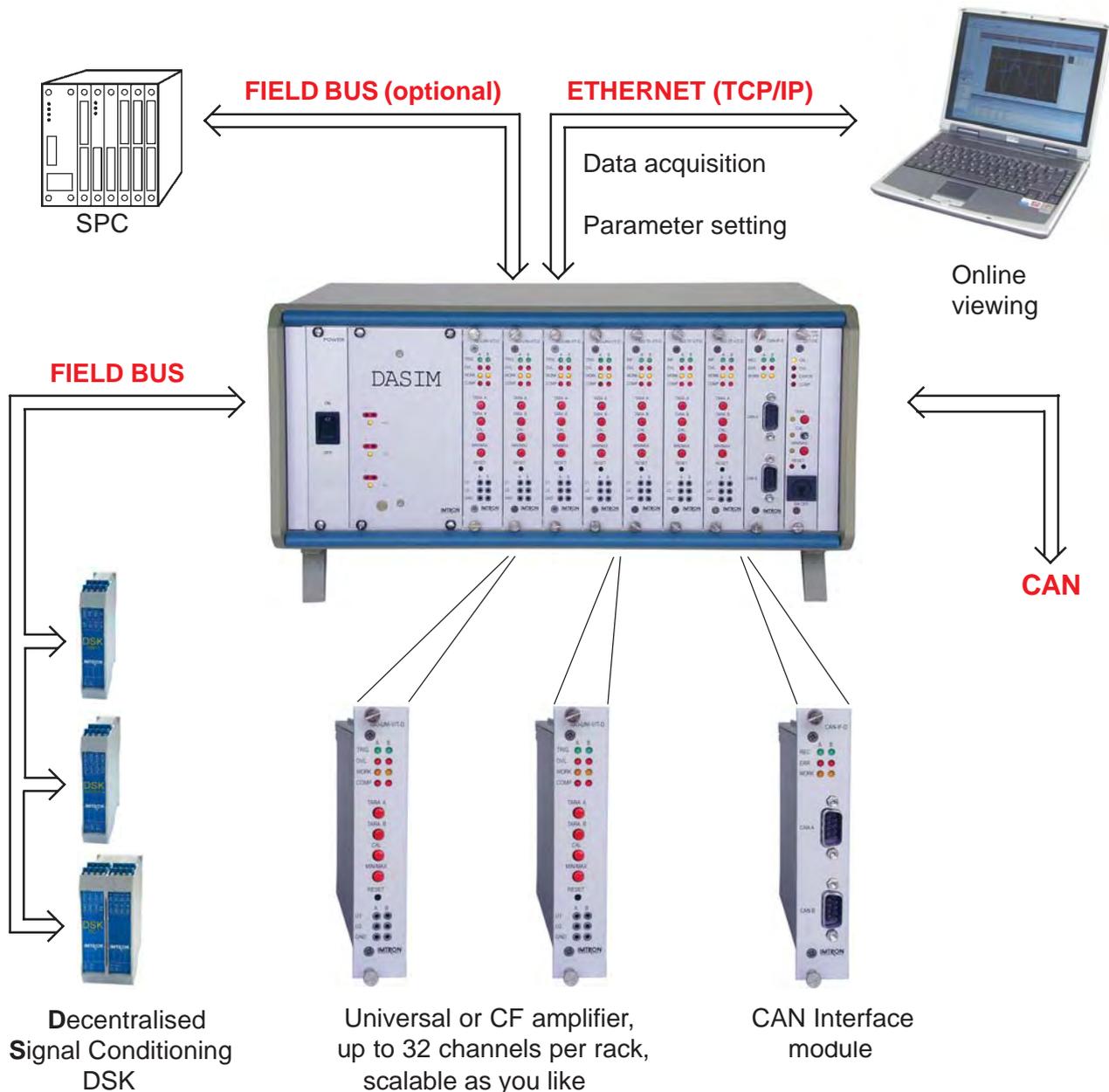
- Zoom, cursor functions
- Supplementary filtering
- FFT Analysis
- Comparison and combination of data
- Arithmetic calculations

For **Documentation** purposes printouts can be generated in Word, Excel, or HTML format. Export of files in DIAdem and Famos format is also integrated.

There are drivers available for DASYLab, DIAdem and LabVIEW. By that data acquisition can be also performed without having primarily to use DAQSoft.



DASIM Linked-Up



DASIM offers different interfaces:

If only analog output signals are needed, parameter setting can be done with DaSoft via the **RS 232** interface. With the digital option, settings can be also done via the Ethernet interface.

The **CAN** interface is well suited for automotive applications. Each amplifier is linked to an internal CAN bus and to the outside CAN world. With **DaSoft** you configure which channel communicates over the CAN bus, and which format is going to be used. Measurement data can be sent from any channel cyclic or on remote request. Acquisition of data from the CAN bus is done with the CAN Interface module. These data are then put on the internal high-speed bus and are processed simultaneously with the other measurement data by the central processing unit.

Fast output of digitised data is done via the **Ethernet** interface. Measurement data from the amplifiers are collected via the internal high-speed bus by the central processing unit. It has also a DSP on board plus a up to 1 MB FIFO. The unit sends out the data packages per TCP/IP protocol. Imtron's software **DAQSoft** has been specially developed for this kind of data acquisition. Drivers for standard DAC software like DASyLab, DIAdem, and LabVIEW are available as alternative.

In combination with the decentralised signal conditioning system **DSK**, a reasonable field bus link can be set up for DASIM. Independent of the measurement system's location, additional data can be gathered via a RS 485 field bus. By that digital input signals can also be gathered cost effectively.

Optional modules for communication with **Field Bus** like Profibus and Interbus can be added to exchange directly data with e.g. an SPC.

Universal Amplifier

Strain Gauge	Range Accuracy Excitation Type	0.5, 1, 2, 4, 5, 10, 25, 50 mV/V ± 0.03 % 0.5, 1, 2.5, 5 V for 120 Ohms, 10 V for 350 Ohms Full, half, quarter bridge (min. 120 Ohms)
DC Signal Speed Indicator	Range Accuracy max. Input Voltage Excitation	0.5, 1, 2, 5, 10, 20, 50, 100 V ± 0.03 % 100 V 3.3, 5, 10, 12 V (50 mA), 15 V (250 mA, not insulated), ± 15 V (250 mA, not insulated)
Potentiometer	Range Accuracy Connection	6.25, 12.5, 25, 50, 100 % ± 0.03 % Automatic detection of 3 / 5-wire leads
Shunt Sensor	Range Accuracy	37.5, 75, 150, 300, 600 mV ± 0.03 %
Thermocouples Type K, L (or J)	Range Accuracy	-100 to +100, +200, +500, +1000 °C ± 0.1 %
Pt100	Range Accuracy	-100 bis +100, +200, +500, +1000 °C ± 0.1 %
Frequency Generator Analog	Range Accuracy Input Voltage Excitation	0.1, 0.2, 0.5, 1, 2, 5, 10, 20 kHz ± 0.03 % ± 0.05 to ±100 V 5 V (50 mA), 15 V (250 mA, not insulated), ±15 V (250 mA, not insulated)
Frequency Generator Digital	Range Accuracy Input Voltage Excitation	5, 10, 20, 50, 100, 200, 500 Hz, 1, 2, 5, 10, 20, 50, 100, 200, 500 kHz ± 0.03 % TTL / CMOS 5 V (50 mA), 15 V (250 mA, not insulated), ±15 V (250 mA, not insulated)
Torque Converter (Discriminator Mode, Telemetry)	Range Accuracy Input Voltage Excitation	10 kHz ± 5 kHz, 100 kHz ± 45 kHz ± 0.03 % TTL / CMOS 5 V (50 mA), +15 V (250 mA, not insulated)
Incremental Encoder	Range Accuracy Input Voltage Excitation Direction sensing / Sync	Variable by presetting of pulse counts ± 0.03 % TTL / CMOS 5 V (50 mA), +15 V (250 mA, not insulated), ±15 V (250 mA, not insulated) without, static, dynamic / with Sync, without Sync
ICP Sensor (with miniatur preamp)	Excitation through VV04 Accuracy min. Input Frequency	4 mA, 24 V ± 0.1 % appr. 2 Hz
Signal Current (with extra module)	Range Accuracy	± 20mA, 4-20 mA ± 0.1 %
All Sensors	Signal bandwidth ISO-UNI-V/T-D ISO-UNI-V/T-H-D Galvanic Insulation	5 kHz up to 18 kHz for each sensor input



Carrier Frequency Amplifier

Strain Gauge, Inductive Torquemeter, Inductive Sensor (LVDT)

Range	0.25, 0.5, 1, 2, 4, 5, 10, 25, 50 mV/V at 5 V excitation
Accuracy	$\pm 0.1 \%$
Excitation	0.5, 1, 2.5, 5 V _{eff} (50 mA)
Type	Full, half, quarter bridge (with Jumper), min. 120 Ohms

All Sensors

Signal bandwidth	1 kHz
Galvanic Insulation	for each sensor input

CAN Interface Module

Acquisition of data from a CAN bus is done with the CAN Interface module. These data are put on the internal high-speed bus, are processed simultaneously with the other measurement data by the central processing unit, and can be handled further with an appropriate data acquisition software like DAQSoft or DASyLab.

The following functions are implemented:

- Each CAN interface module has two independent CAN nodes. Both nodes can transmit 24 synchronous values at 16 bit each.
- Per channel the following drivers can be chosen:
1st driver according to ISO 11898-2 (CAN High-speed)
2nd driver according to ISO 11898-3 (CAN Low-speed)
- Up to 8 signals per message can be processed
- Available data formats are: Boolean, Signed Char, Unsigned Char, Signed Integer, Unsigned Integer, Signed Long, Unsigned Long, Float, and Double
- Available baud rates are: 10, 20, 40, 50, 80, 100, 125, 200, 250, 400, 500, 666, 800, 1000 kBaud. Rates as of 125 kBaud are only available in CAN High-speed mode.
- Switching in of bus termination by software

DASIM Advantages and Further Technical Details:

- Only minimal stockkeeping necessary as the universal amplifier handles more than 14 types of sensors, and can be easily reconfigured by software for different applications
- Each channel's DSP (digital signal processor) fulfills the following tasks:
 - Error correction
 - Physical correct settings (e.g. 100°C for thermocouples)
 - Automatic self-test and zero setting
 - Linearisation
 - Digital filtering
 - Monitoring of threshold values
 - Peak value display for min/max setting
 - Overload display with hold function

DASIM installed in a modern test bed

DASIM Advantages and Further Technical Details (cont.)

- Transmission of digital signals via internal high-speed bus plus two highly accurate analog output signals per channel: U1 (fullscale) = ± 10 V and U2 (scalable) = $0 \dots \pm 2 \times U1$
- Parameter settings per amplifier are stored in a flash EPROM, allowing standalone operation without PC
- Deposition of sensor data in an external sensor data base for automatic parameter setting
- Space saving 2-channel amplifier in one housing, specially useful for mobile applications. Each channel is independent from the other.
- Locking of push buttons physically or by password
- High accuracy of 0.03 %, resolution 16 bit
- DC insulation of RS 232 interface and internal RS 485 interface
- Remote control (DC insulated) of auto zero setting, calibration signal, and min/max setting by means of SPC, or via DaSoft
- Rugged cassette housing per 2-channel amplifier for mechanical (dust, physical damage) and EMC protection
- Scalability of the system in (up to) 32 channel steps at sample rates of 480 kS/s per 19" rack or housing
- Acquisition of CAN data via the CAN interface module and processing with other measurement data
- Sending measurement data of any channel to a CAN bus



IMTRON Industrielle Mess- und
Steuerungstechnik GmbH
Carl-Benz-Strasse 11
D-88696 Owingen
Tel.: +49 7551 / 9290-0
Fax: +49 7551 / 9290-90
www.ImtronGmbH.de