www.instrumentation.it
INSTRUMENTATION DEVICES SRL
Via Acquanera 29, 22100 COMO (Italy) tel. +39.031.525391 - fax +39.031.507984 - info@instrumentation.it

imc
integrated measurement & control

imc COM

System Integration's Bright Future

TÜV CERT DIN EN ISO 9001 Z-NR: 01100950513

imc COM

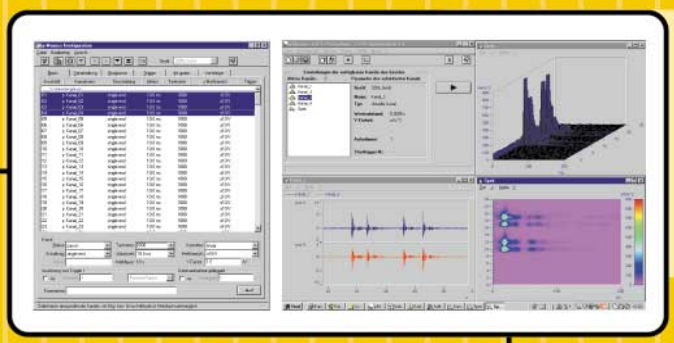
The imc COM Programming Interface

The imc COM Programming Interface is a tool for system integration which can be integrated into all modern programming languages, such as Microsoft Visual Basic, Visual Basic for Applications, C++, Borland's Delphi and others. COM (Component Object Mode) is a software interface developed by Microsoft and has been implemented in such well-known systems as OLE, ActiveX and DirectX. COM was developed with the goal of extending the functionality of programming languages, without targeting any particular language. Thus, COM-based components provide their functionality to a number of COM-compatible programming languages.

The imc philosophy

- All measurement configuration parameters are set using the operating and viewing software. The results are directly displayed.
- The measurement configuration can be saved as a Setup
- The Setup is loaded into the programming language
- The measurement procedure can be designed and modified using the COM-interface

Measurement system



Standard operating and viewing software for the measurement system

The user designs the measurement routine and specifies the measurement curve display options. Working with the system is patterned after manual setting of an instrumentation device. The Setup is comprised of device settings (channel properties, measurement curve display, triggers, real-time computations) and measurement log layout.

Test station

The programmer can load the prepared Setup into his program with a single command. This makes any programming of the device unnecessary. Only the test program procedure and the user interface need to be programmed.

The completed Setup is saved and provided to the programmer.

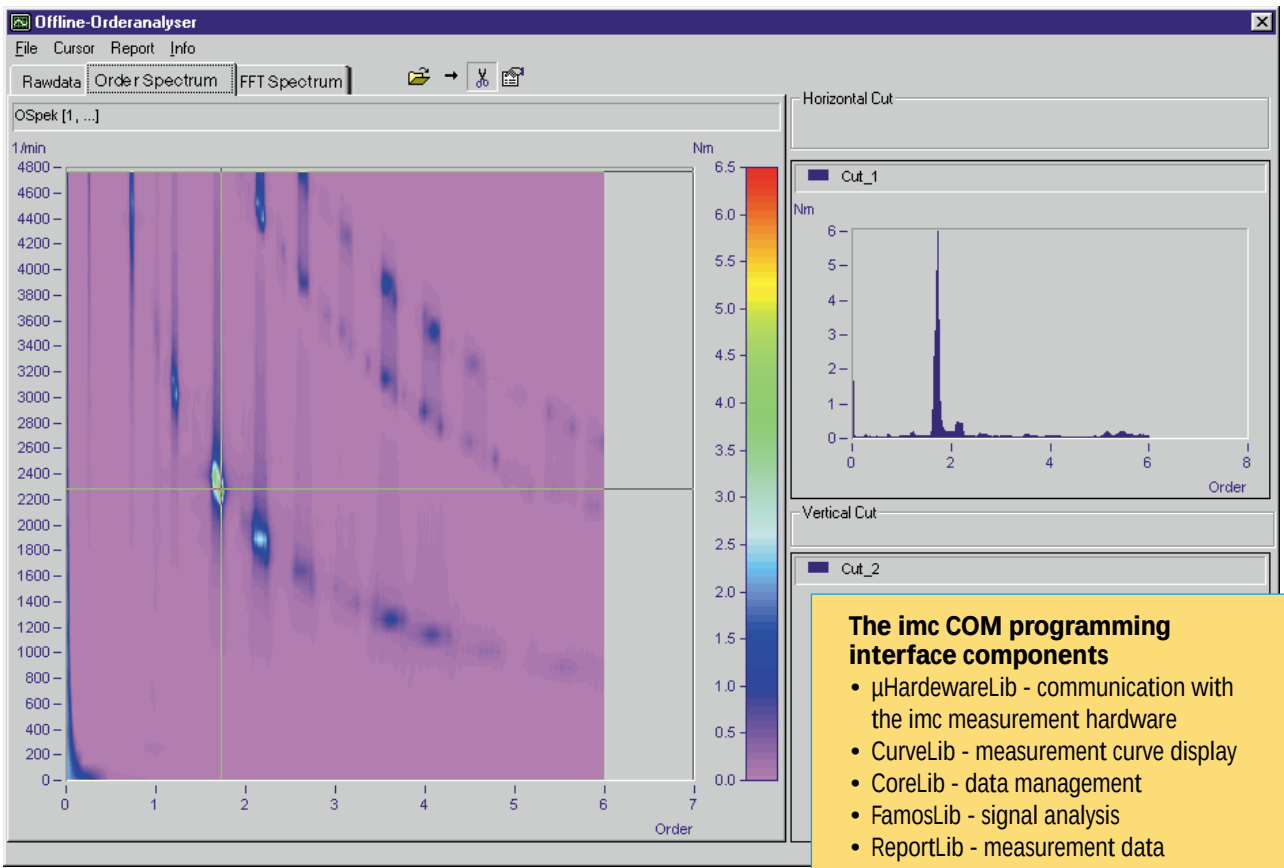
The Demands on System Integration

System integration is in ever-increasing requirement for the purpose of test station configuration and other automated instrumentation tasks. A typical modern, professional test station consists of an independently working automation system which moves the "test station", the measurement system, a central PC which provides the operating interface, the data management system and the networking of the various components, as well as a central database in the user's LAN.

Since all test station components work together as an integral unit, the choice of the programming language cannot depend on only one component. The main thing is that programming and system integration be as efficient as possible.

The time investments and other expense currently associated with the maintenance, updating and expanding of such programs are substantial.

The imc programming interface offers the ability to use imc hardware and software functions, no matter what programming language the user chooses to use. Channel properties, trigger conditions, real-time computation functions and data plot display can be set, tested and saved using the standard operating and viewing software. The settings can be loaded quickly and easily by means of only a few lines of code.



The imc COM programming interface components

- µHardewareLib - communication with the imc measurement hardware
- CurveLib - measurement curve display
- CoreLib - data management
- FamosLib - signal analysis
- ReportLib - measurement data documentation
- Spectral Kit - (optional)
- Class-counting Kit - (optional)

imc COM

The imc COM Libraries

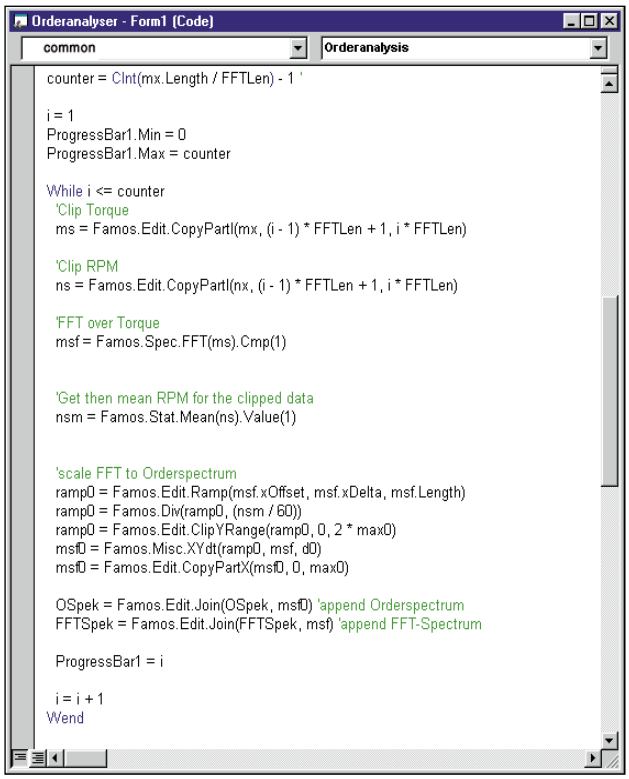
The components described below are derived from LOOK and FAMOS, programs for data visualization, signal analysis and documentation, which belong to the standard imc product palette. They enable all LOOK/FAMOS functions to be integrated into the customer-specific program.

CoreLib - Data Management

Overarching data management is needed before signal analysis, data display and saving can be carried out. This is where CoreLib comes in. It provides the objects for loading and saving files and for managing channels and channel groups. Access to the measured data and channel object properties is obtained via the corresponding properties and methods. For system integration purposes, channel objects can be filled with any data; the data can even come from measurement hardware other than imc's. For instance, the data can be from control or automation systems, from digital sensors or interfaces such as RS-232, RS-485 or CAN-bus, etc. Any data available in the PC can integrated with data from the imc measurement hardware via the imc COM programming interface for joint analysis, visualisation and documentation.

FamosLib - Signal Analysis

FamosLib offers a broad range of mathematical and statistical signal analysis functions for advanced data processing, as well as data manipulating capabilities such as cutting and splicing of waveforms, etc.



Basic functions
Extensive mathematical and statistics functions for data analysis and data adaptation
- basic math, statistics functions
- trigonometry functions
- integration, differentiation, logarithms etc.
- digital filters
- correlation and FFT functions
- interpolation and approximation functions
- scaling, band and slope limiting
- cutting and splicing of waveforms
- resampling and adapting of waveforms

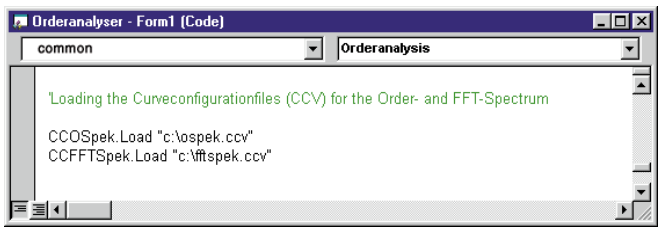
Spectral Kit (optional)
The functionality scope for professional spectrum analysis

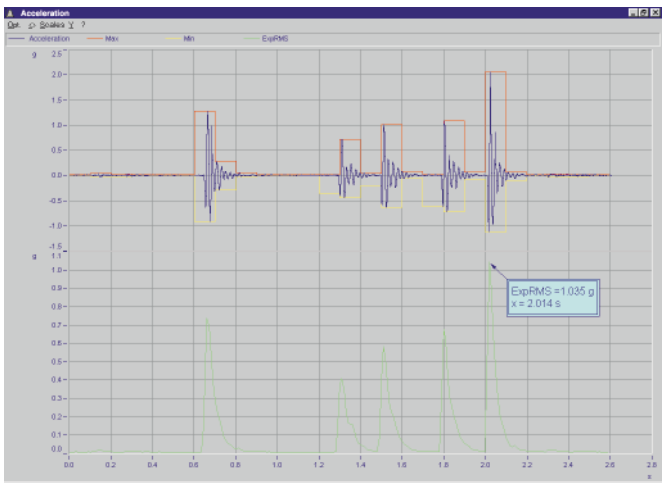
Class-counting Kit (optional)
2D and 3D class-counting functions for part fatigue testing

CurveLib - Data Visualisation

CurveLib comprises all objects for data visualisation. The developer is provided with two types of measurement windows; a self-sufficient window and a control which can be integrated into the program interface directly. The operating and viewing software makes it possible to created whole curve configurations and load these into the code. The user has a choice of data display modes such as Y-graphs, t-graphs, XY-graphs, waterfall diagrams, color maps and bar meters. Switching between different display modes is possible at any time via code or via the integrated curve window menu.

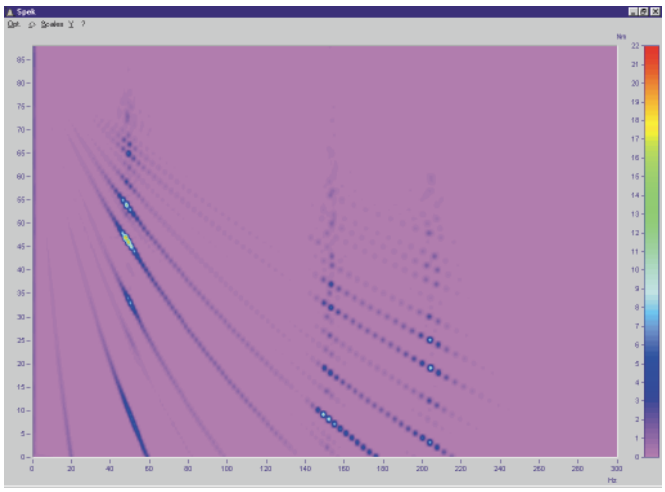
The user has practically unlimited options for designing the curve window, with data plots, axes and coordinate systems. To provide clearer distinctions, the curves can be assigned special colors and patterns. Such functions as zooming, scrolling through long plots and marking of special points on the curve need not be programmed by the user, but are included in the curve window's functionality. These options can be called either via curve window menu or via COM-commands and thus save valuable developing time.

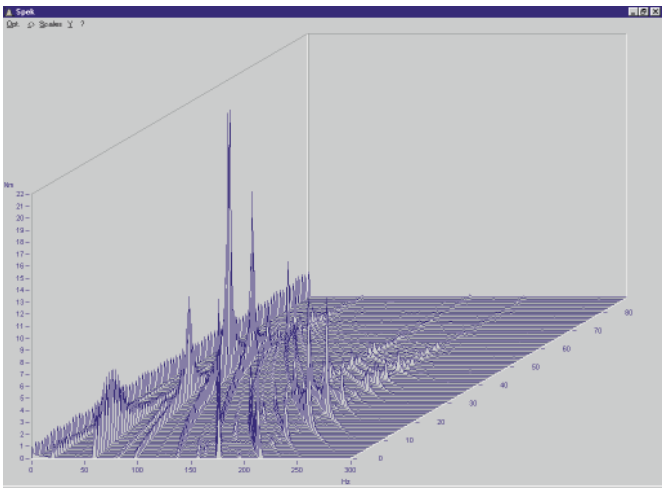




Curve window features

- free choice of and switching between different display modes (Y/t, X/Y, color map, bar meter, numerical value)
- any number of curves in a common coordinate system
- overview window
- grid
- assignment of colors and patterns for each individual curve
- markers
- navigation around and in plot
- direct surveying of curve values using cursor
- zooming
- export to the Clipboard for insertion into other applications
- direct printout of measurement curve window
- loading and saving of complete curve configurations





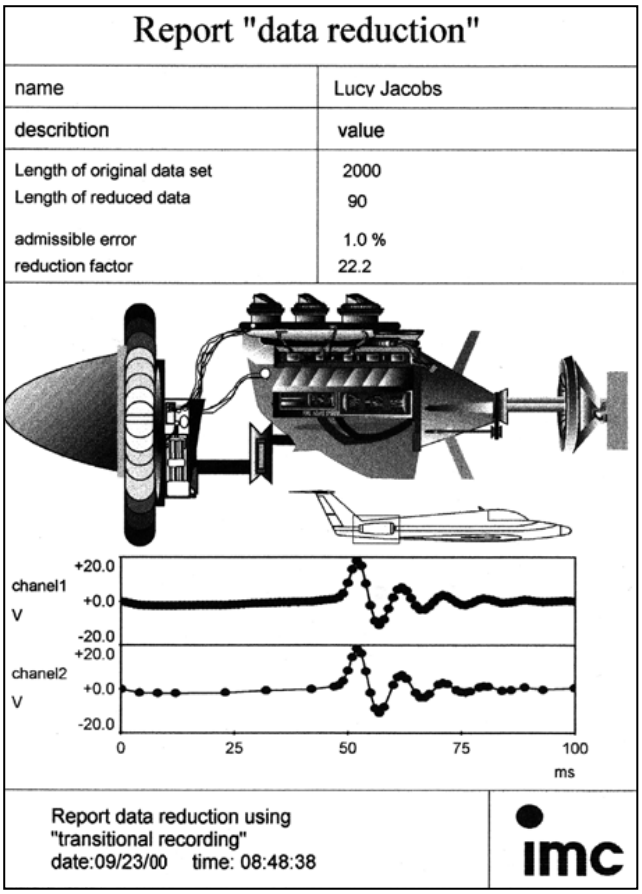
imc COM

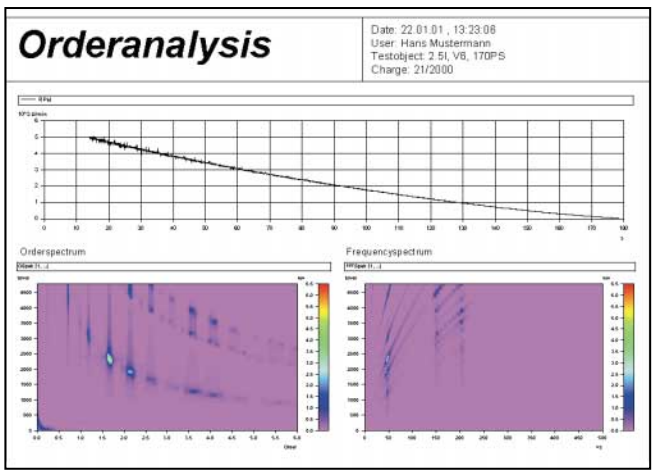
Composing Reports

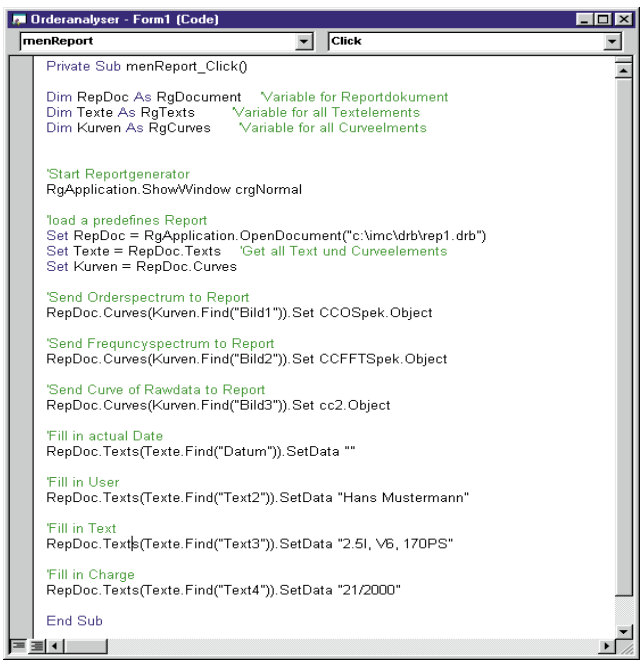
No successful measurement and evaluation task is complete without a log documenting the process and its results. ReportLib comes with the Report Generator, a program for designing measurement logs, similar to a DTP program. The user sets the layout of the report by positioning curve windows, texts, tables, illustrations and other graphic elements as desired.
Each element of the measurement log receives a name by which it can later be addressed in the code.
Using appropriate COM-commands, such a pre-designed report can be loaded and filled with the desired measurement data. Thus, defining the measurement log in the code is rendered unnecessary.

Report elements

- curve window (fixed or user-defined size)
- text (with different place holders for times, dates, texts,...)
- tables
- lines (any direction)
- frames
- rectangles (pointy or rounded corners)
- ellipses
- polygons
- polylines







An example of loading and filling of the report depicted on the left

The imc Hardware Control Components

HardwareLib offers access to the entire functionality range of imc hardware. The easiest way to define a measurement is to load experiments which were previously created and tested using the standard operating and viewing software. Only a very few commands are needed for this purpose and prior testing can ensure that the measurement is free of errors. All settings dialogs which are available to the user in the operating and viewing software can be displayed through the use of corresponding COM-commands. This means that the programmed application, once completed, matches the standard operating and viewing software in terms of operational style. Naturally, all channel and measurement attributes can be modified via code in order to reflect user specifications or special program situations.

imc-Hardware

SPARTAN
Networkable measurement system for affordable, multi-channel acquisition of current, voltage and temperature signals

- 16/ 32 channel measurement system
- isolated analog and digital inputs
- real-time signal processing with internal DSP's
- internal PCMCIA removable hard drive
- operable independently of PC

busDAQ
CAN-bus measurement data collector

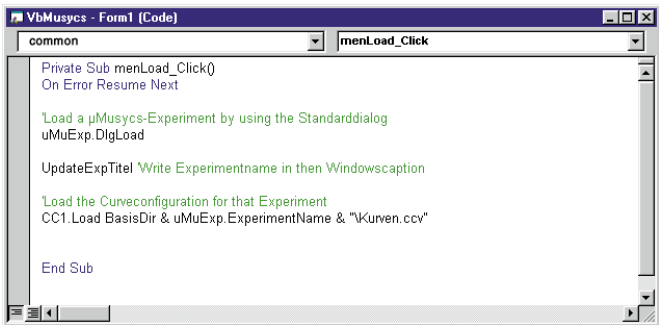
- 2-6 CAN nodes connectable
- on-line computations via integrated DSP
- data storage to PCMCIA hard drive
- internal PCMCIA removable hard drive

imc Cronos
Universal measurement device for physical quantities

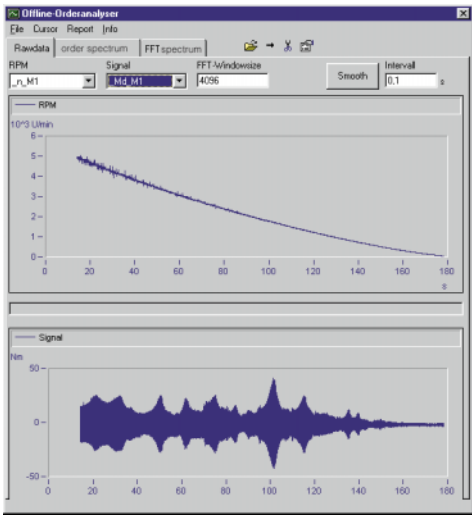
- fully integrated, self-sufficient measurement device with built-in PC and TFT-screen
- 35 analog inputs for voltage, current, temperature, measurement bridges, IPC
- 4 inputs for incremental encoders
- 16 digital inputs and 8 digital outputs- real-time signal processing with internal DSP's

µ-MUSYCS
Configurable, universal measurement system

- 32SE/16DI channel universal measurement system
- 3 special channels for ICP accelerometers
- incremental encoder inputs, digital inputs and outputs
- signal conditioning (bridge, high-voltage amp and more..) and optional filter
- real-time signal processing with internal DSP's



Example of loading a prepared device configuration



imc COM

the Works, at your fingertips…

www.imc-berlin.de

Foreign branch offices and representatives

GERMANY
ADDITIVE Soft-und Hardware
für Technik und Wissenschaft GmbH
Rohrwiesenstr. 2
61381 Friedrichsdorf
Tel.: +49 6172 5905-0
Fax.: +49 6172 77613
E-mail: hotline@additive-net.de

ITALY
Instrumentation Devices SRL
Via Acquanera 34/M
22100 Como
Tel.: + 39 0 31 525391
Fax.: + 39 0 31 507984
E-mail: info@instrumentation.it

AUSTRIA
ADDITIVE Hard-und Software
für Technik und Wirtschaft
GmbH & Co. KG
Schweglerstr. 37
1150 Wien
Tel.: +43 1 9828529-0
Fax.: +43 1 982852920
E-mail: hotline@additive.at

AUSTRALIA
Compumod Pty Ltd.
L13 309 Pitt Street
Sydney, NSW 2000
Sydney South 1235
Tel.: +61 2 9283 2577
Fax.: +61 2 9283 2585
E-mail: hotline@compumod.com.au

INDIA
PT Instruments Pvt. Ltd.
6/6/10, Bhawani Nagar
P. Box No. 17436
Marol Maroshi Road, Andheri (E)
Mumbai 400 059
Tel.: +91 22 8511353
Fax.: +91 22 8501886
E-mail: ptinst@vsnl.com

SWITZERLAND
imcAdd AG
Zürcherstraße 148
Postfach 463
8501 Frauenfeld
Tel.: +41 52 722 1455
Fax.: +41 52 722 1459
E-mail: imcadd@leunet.ch

FINLAND
UG Electronics Oy
Ruukintie 3
02320 Espoo
Tel.: +358 9 859 55 417
Fax.: +358 9 8026699
E-mail: sales@unigraf.fi

JAPAN
TOYO Corporation
1-6, Yaesu 1-chome,
Chuo-ku,
Tokyo 103-8284
Tel.: +81 3 3279 0771
Fax.: +81 3 5205 2030
E-mail: kikaku@toyo.co.jp

SWEDEN
CE-BIT Elektronik AB
Industrivägen 1
17148 Solna
Tel.: +46 8735 75 50
Fax.: +46 8735 61 65
E-mail: mail@cebit.se

FRANCE
Gould & Nicolet
9 Avenue du Canada
BP 221, Les Ulis
F-91942 Courtaboeuf Cedex
Tel.: +33 164 864545
Fax.: +33 164 864546

KOREA
SV KOREA Inc.
22-308, Technopark,
Hanyang Univ. 1271
Sa-1 dong, Ansan,
Kyonggi-Do, 425-791
Tel.: +82 345 501 4030
Fax.: +82 345 501 4032
E-mail: sucho@hanmail.net

TAIWAN
System Access Company Ltd.
6F-4., No. 160,
Minchuan East Road, Sec. 6
Taipei R.O.C. 114
Tel.: +886-2-8792-6266
Fax.: +886-2-8792-6265
E-mail:syaccess@ms2.hinet.net

JJ UK
JJ Systems Ltd.
Highbury, Newbury Street
Whitchurch,
Hampshire RG28 7DN
Tel.: +44 1256 895111
Fax.: +44 1256 896100
E-mail: jjsystems@aol.com

NETHERLANDS
BIG BEN Instrumenten
Geldropseweg 26
5611 SJ Eindhoven
Tel.: +31 40 2128359
Fax.: +31 40 21255075
E-mail: bigben@xs4all.nl

USA
Hi-Techniques, Inc.
2515 Frazier Avenue
Madison
WI 53713
Tel: +1 608 221 7500
Fax.: +1 608 221 7509
E-mail: amelia@hi-techniques.com

Errors and changes excepted

imc
Meßsysteme GmbH
Voltastraße 5
D-13355 Berlin
phone ++49-30-467090-0 · fax ++49-30-4631576
email hotline@imc-berlin.de
http://www.imc-berlin.de

imc
integrated measurement & control