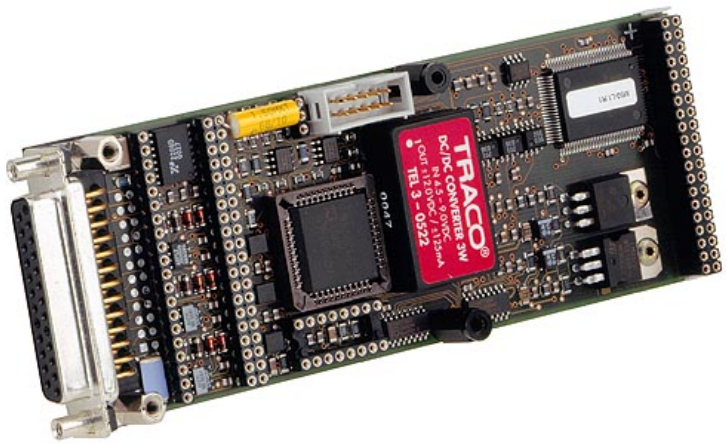
M50 – Synchro/Resolver Converter

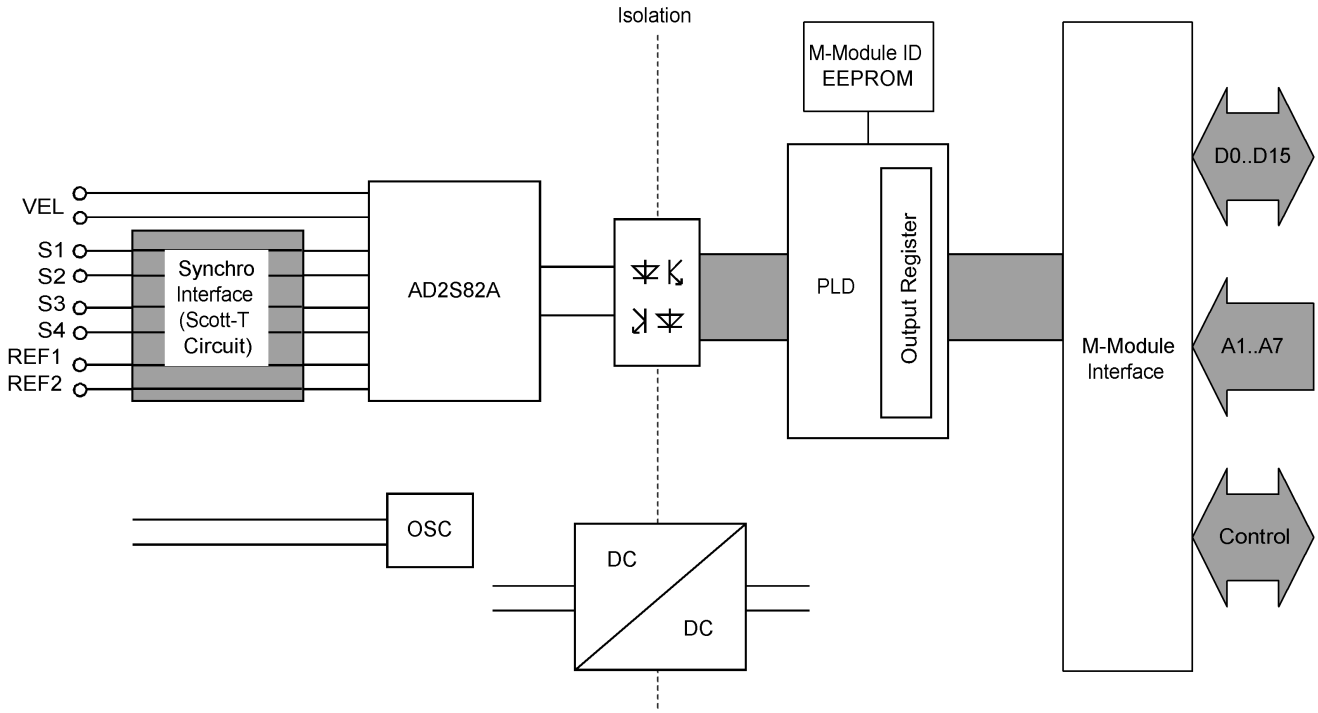
- **Resolver/synchro-to-digital converter**
- **Up to 16 bits resolution**
- **On-board reference frequency generation**
- **On-board signal conditioning**
- **2 arc minutes accuracy**
- **Analog velocity output**
- **Optical isolation**
- **-40 to +85°C screened versions**
- **Not conforming to RoHS**



The mezzanine card M50 is a 1-channel, continuous-tracking synchro- or resolver-to-digital converter with a configurable 10 to 16-bit resolution and a tracking rate of up to 1040 rps. The M-Module™ has a reference signal generator with a frequency range of 50 Hz to 20 kHz. Reference output voltages can be in a range of 2 Vrms to 21 Vrms. An analog velocity output can be used to monitor the rotational speed.

The M-Module™ is suited for nearly all synchro/resolver sensors: the user can easily adapt the M50 by plugging passive components.
The M50 is optically isolated and supplied by an on-board DC/DC converter. Optical isolation of the digitized values significantly improves accuracy compared to common transformers.
The M50 is based on the M-Module™ ANSI mezzanine standard. It can be used as an I/O extension in any type of bus system, i.e. CPCI, VME or on any type of stand-alone SBC. Appropriate M-Module™ carrier cards in 3U, 6U and other formats are available from MEN or other manufacturers.

Diagram


Isolation
M-Module ID EEPROM
VEL
S1
S2
S3
S4
REF1
REF2
Synchro Interface (Scott-T Circuit)
AD2S82A
PLD
Output Register
M-Module Interface
D0..D15
A1..A7
Control
OSC
DC
DC

Technical Data

AD2S82A Resolver-to-Digital Converter	■ Resolution: 10/12/14/16 bits ■ Reference input voltage: variable, 2V RMS..90V RMS/115V RMS ■ Reference output voltage: max. 26V RMS, 1.5W ■ Reference frequency range: 50..20,000Hz ■ Accuracy: □ ±2/±4/±8/±22 arc min, ±1LSB (resolver input) □ Accuracy: ±9/±13/±15/±29 arc min, ±1LSB (synchro input) ■ Tracking rate: depends on frequency and resolution (max. 1040 rps) ■ Small/large step settling time: depends on frequency and resolution
Miscellaneous	■ Input signals: 10% max. harmonic distortion ■ Velocity output: ±8V
Peripheral Connections	■ Via front panel on a shielded 25-pin D-Sub receptacle connector ■ Via carrier board (rear I/O)
M-Module™ Characteristics	■ A08, D16, INTA, IDENT
Electrical Specifications	■ Isolation voltage: 500V DC ■ Supply voltage/power consumption: +5V (4.85V..5.25V), 550mA typ. ■ MTBF: 34,000h @ 50°C (derived from MIL-HDBK-217F)
Mechanical Specifications	■ Dimensions: conforming to M-Module™ Standard ■ Weight: 102g
Environmental Specifications	■ Temperature range (operation): □ 0..+60°C □ Industrial temperature range on request □ Airflow: min. 10m³/h ■ Temperature range (storage): -40..+85°C ■ Relative humidity range (operation): max. 95% non-condensing ■ Relative humidity range (storage): max. 95% non-condensing ■ Altitude: -300m to + 3,000m ■ Shock: 15g/11ms ■ Bump: 10g/16ms ■ Vibration (sinusoidal): 2g/10..150Hz ■ Conformal coating on request
Safety	■ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers
EMC	■ Tested according to EN 55022 (radio disturbance), IEC1000-4-2 (ESD) and IEC1000-4-4 (burst)
Software Support	■ MEN Driver Interface System (MDIS™ for Windows®, Linux, VxWorks®, QNX®, OS-9®) ■ For more information on supported operating system versions and drivers see Downloads.

Ordering Information

Standard M50 Models	**04M050-00**	1-channel synchro/resolver converter, 0..+60°C, no RoHS
Miscellaneous Accessories	**05M000-00**	M-Module™ cable, 2m, with 25-pin D-Sub plug/housing to pig tail
	05M000-17	25 mounting screw sets to fix M-Modules™ on carrier boards
Software: Linux	This product is designed to work under Linux. See below for potentially available separate software packages from MEN.	
	13M050-06	MDIS4™/2004 low-level driver sources (MEN) for M50
Software: Windows®	This product is designed to work under Windows®. See below for potentially available separate software packages from MEN.	
	13M050-70	MDIS4™/2004 Windows® driver (MEN) for M50
Software: VxWorks®	This product is designed to work under VxWorks®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	13M050-06	MDIS4™/2004 low-level driver sources (MEN) for M50
Software: QNX®	This product is designed to work under QNX®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	13M050-06	MDIS4™/2004 low-level driver sources (MEN) for M50
Software: OS-9®	This product is designed to work under OS-9®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	13M050-06	MDIS4™/2004 low-level driver sources (MEN) for M50
Software: Miscellaneous	**13M050-01**	2S80-series calculation software (Analog Devices) for M50

For operating systems not mentioned here contact MEN sales.

Documentation	Compare Chart robotics and motion M-Modules™ » Download	
	20M000-00	M-Module™ Draft Specification, Rev. 3.0
	20M050-00	M50 User Manual

Contact Information

Germany

MEN Mikro Elektronik GmbH
Neuwieder Straße 3-7
90411 Nuremberg
Phone +49-911-99 33 5-0
Fax +49-911-99 33 5-901

info@men.de
www.men.de

France

MEN Mikro Elektronik SA
18, rue René Cassin
ZA de la Châtelaine
74240 Gaillard
Phone +33 (0) 450-955-312
Fax +33 (0) 450-955-211

info@men-france.fr
www.men-france.fr

USA

MEN Micro, Inc.
24 North Main Street
Ambler, PA 19002
Phone (215) 542-9575
Fax (215) 542-9577

sales@menmicro.com
www.menmicro.com