Time Electronics

8085 Advanced Signal Scanners for use with Dry Block Calibrators & Reference Sensors

Description

The 8085 series are advanced signal scanners (ASM) that offer a unique time-saving and automatic solution to calibrate multiple temperature sensors simultaneously. They are designed for use wherever temperature measurement is critical and/or there is a need for traceable calibration documentation.

Each model is an 8-channel scanner that can be used on CalBench systems with control centre modules (8060, 8060+, 7051+ or CC12).

Communication can be made via EasyCal software or Ametek Jofracal software. Up to 3 scanner units can be stacked to calibrate up to 24 sensors at the same time. It can handle signals from 2-, 3- and 4 wire RTD's, TC's, transmitters, thermistors, temperature switches and voltage.

The solution includes the easy-to-use software Jofracal to set up, execute, print and save the valuable traceable calibration data. The software comes pre-loaded on the CalBench control centre and the under console RS-232 port provides an easy way to connect the unit quickly on the bench.

Jofracal controls all Jofra dry block heating/cooling sources and includes the flexibility to use manual liquid baths, ice-points or dry blocks. Connect the reference temperature sensor directly to the scanner or use your existing Jofra temperature reference device.

Furthermore the Jofralog software allows the user to use the a multi scanner set up as a data-logging device for up to 24 sensors.

Features

Calibrate 8 temperature sensors
Design your own calibration procedures - start calibrating and leave for other tasks. Save precious time and calibrate all sensors under exactly the same conditions.

Data-logging for multiple sensors
Software included for data logging of up to 8 sensors with user-defined intervals.

Calibrate any temperature sensor
Universal input to handle: 2-, 3-, 4-wire RTD's, TC's, transmitters, thermistors, thermo switches and voltage.

Integrate with Dry Block Calibrators
Combine ASM with any Jofra dry block, TE models 8070, 8072, 8073, 7861, 7862, 7870, 7872 etc.

Reference sensor input included
Dedicate one input channel for your temperature reference sensor (TERS models) with an accuracy to 0.026°C / 0.047°F.

Documentation made easy
RS-232 communication for both EasyCal and Jofracal calibration software pre-loaded on the CalBench system.

Time Electronics Ltd, Unit 5 TON Business Park, 2-8 Morley Road, Tonbridge, Kent, TN9 1RA, United Kingdom
T: +44 (0) 1732 355993 | F: +44 (0) 1732 350198 | mail@timeelectronics.co.uk | www.timeelectronics.com

v1a
12/21

Versions

The 8085 ASM-series is available in 3 versions depending on the kind of sensors to be measured.

8085 ASM-801 has 8 universal plugs. This is a fixed screw terminal solution used to measure RTD's, TC's, mA, voltage, ohm, and transmitters. It measures the cold junction (CJ) temperature for each channel and is able to supply a very accurate cold junction (CJ) temperature compensation.

8085 ASM-802 has 8 small TC plugs for measurement of TC sensors. This model also measures the cold junction (CJ) temperature for each channel and is able to supply a very accurate cold junction (CJ) temperature compensation.

8085 ASM-803 has 8 LEMO plugs, which are primarily for measurement of RTD sensors. This solution makes it possible to measure current, voltage and ohm. It has built-in loop power supply for each channel.

Models

The ASM multi-scanner is made in an A and a B model. The ASM B model is the complete solution with integrated scanner and high accuracy multi signal measuring circuits. The ASM A model is less expensive and is designed to add 8 channel scanning capabilities to an existing instrument. The A model therefore needs the measuring capabilities that typically comes via the 8060 or 7051 CalBench modules with integral multimeter.

A model

The A model use the measuring circuit of an existing instrument. This means that the normal set-up of the measuring equipment is used, and the multi-scanner then makes it possible to calibrate up to 8 sensors simultaneously. The built-in cold junction temperature measuring circuit ensures high accuracy when calibrating thermocouples. The A model is also capable of working manually with a channel selector at the back.

The A model may transmit an analogue signal of up to 8 sensors to one connected measuring module or device. It is able to transmit signals up to 30VDC, 30 mA.

B model

The B model has the same functions as the A model, but it differs as it is not necessary to include a measuring instrument in the set-up, as the multi-scanner has build-in measurement capabilities.

The most important advantage of the B model is the fact that it is possible to obtain huge reductions in time of the calibration procedure. The B model is able to perform several measurements each second, whereas the A model as an example will spend approx. 15 seconds on each measurement, when connected to a dry block calibrator.

The B model is able to measure voltage up to 10V, resistance up to 4KΩ and current up to 24mA.

True Ohm Measurement

The 8085 ASM-801 and ASM-803 employ state-of-the-art DC measuring techniques. To achieve high accuracy, the measuring principle used by the ASM is True Ohm Measurement thus eliminating the EMF from cables, sockets, and sensors.

True Ohm Measurement is a proven method to achieve accurate compensation for errors induced by thermal effects. The resistance is measured through the 4-wire system at 0.8 mA, after which the instrument takes a reading without any applied current. The second reading is the "error EMF".

Measurement of up to 24 sensors at the same time

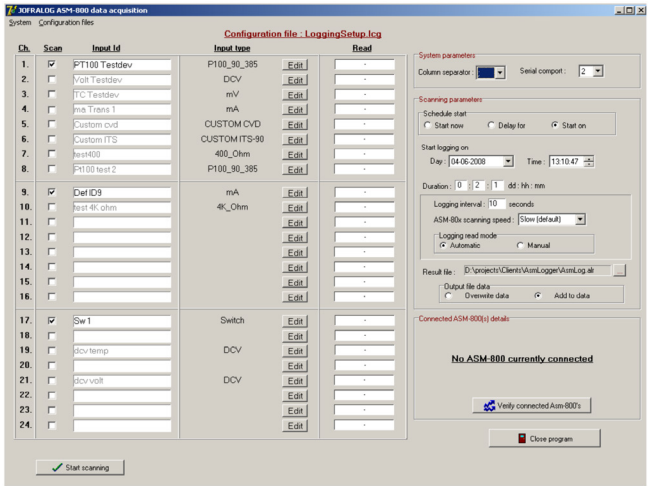
For both ASM models it is possible to connect up to 3 ASM multi-scanners, enabling you to measure up to 24 sensors simultaneously. Both models are able to perform / transmit the following measurements: 2-, 3- and 4-wire RTD, TC signals with or without cold junction (CJ) compensation, thermistors, transmitters, current, voltage, and ohm sources / loads.

8085 ASM-801 A/B and ASM 803 A/B both have built-in 24 V loop power for 4-20 mA transmitter.

Data-logging for multiple sensors (Jofralog)

The data acquisition software Jofralog allows the user to utilitize the ASM multi-scanner as a data-logging device for multiple sensors. The Jofralog program allows the configuration and execution of a logging procedure collecting data from up to 24 sensors saving the data in a format compatible to Microsoft Excel.

Jofralog works with a ASM B model for collecting data from 8 channels. By adding 1 or 2 ASM A models, the number of channels may be expanded to 16 or 24. When the user has defined a scanning job, the user may store the configuration including sensor definitions for every channel in a configuration file. Whenever required the information may be loaded and reused. On start-up the previous configuration used is always loaded automatically saving the user a lot of time. Furthermore the uploaded information will be checked against the configuration to determine any conflicts.



Time Electronics Ltd, Unit 5 TON Business Park, 2-8 Morley Road, Tonbridge, Kent, TN9 1RA, United Kingdom
T: +44 (0) 1732 355993 | F: +44 (0) 1732 350198 | mail@timeelectronics.co.uk | www.timeelectronics.com

FUNCTIONAL SPECIFICATIONS

Power supply

Power supply ..... External AC/DC adapter
Input ....90 – 254V, 45 – 65Hz
Output..... 30V ±2% regulated DC, max. 30W

Scanning rate

Scanning rate ..... Max. 5 channels per seconds

PHYSICAL SPECIFICATIONS

Instrument dimensions

L x W x H.....250 x 249 x 69 mm (9.8 x 9.8 x 2.7 in)

Instrument weight

Net weight .....2.3 kg (5.07 lb)

Shipping (including carrying case)

Weight .....6.3 kg (13.9 lb)
Size: L x W x H....350 x 560 x 180 mm (13.8 x 22.1 x 7.1 in)

Miscellaneous

Serial data interface RS-232
Specification temperature..... 20 to 26°C (68 to 79°F)
Operating (ambient) temperature ... 0 to 40°C (32 to 104°F)
Storage (ambient) temperature...-20 to 50°C (-4 to 122°F)
Humidity ..... 0 to 90% RH @ 30°C
CE Conformity EN61326

INPUT SPECIFICATIONS (A MODEL)

All input specifications apply to the instrument connected

Transmitter supply

Output voltage ....24VDC +10%
Output current .....Maximum 28 mA

Accuracy automatic cold junction compensation

ASM-801/802 ..±0.20°C (±0.36°F) @ ambient temperature
..... 20 to 26°C (68 to 79°F)
ASM-803 .....±0.50°C (±0.90°F) @ ambient temperature
..... 20 to 26°C (68 to 79°F)
Temperature drift outside 20 to 26°C . 0.05°C/°C 0.05°F/°F)

Input specifications

A-models when used with other equipment *

RTD 4-wire .....2.5 ppm rdg. (0-400 ohm)
..... 15 ppm rdg. (400-4000 ohm)
RTD 3-wire .....2.5 ppm rdg. + 50 mohm (0-400 ohm)
..... 15 ppm rdg. + 50 mohm (400-4000 ohm)
mA.....1 ppm rdg. (0-24 mA)
MV, V..... 2uV

** Accuracies from the connected instruments have to be added*

INPUT SPECIFICATIONS (B MODELS)

Transmitter supply

Output voltage.....24VDC +10%
Output current .....Maximum 28 mA

Transmitter input mA

Range..... 0 to 24 mA
Accuracy (12 months) .....±0.01% Rdg. +0.01% F.S.

Voltage input VDC

Range..... 0 to 12 VDC
Accuracy (12 months) ..... ±0.005% Rdg. +0.01% F.S.

Switch input

Switch dry contacts
Test voltage..... Maximum 2.5 VDC
Test current .....Maximum 0.8 mA

RTD input specifications

Signal type ..... 2-, 3-, 4-wire true ohm RTD input
Signal range..... ..0-400 Ω (PT10/PT50/PT100)
Accuracy (12 months)..... ±0.002% Rdg. +0.002% F.S.
Signal range..... 0-4000 Ω (PT200/PT500/PT1000)
Accuracy (12 months)..... ±0.002% Rdg. +0.005% F.S.

For 3-wire input add 50 mΩ assuming all three RTD leads are matched. For 2-wire add 100 mΩ.

Thermocouple specifications

Signal range ..... -10mV – 78 mV
Accuracy ..... ±(0.005% of rdg. + 0.005% of F.S.)

Accuracy automatic cold junction compensation

ASM-801/802 ..±0.20°C (±0.36°F) @ ambient temperature
..... 20 to 26°C (68 to 79°F)
ASM-803 .....±0.50°C (±0.90°F) @ ambient temperature
..... 20 to 26°C (68 to 79°F)
Temperature drift outside 20 to 26°C ..... 0.05°C/°C (0.05°F/°F)

B Model Temperature Specifications

4-wire RTD Type	Temperature range				12 months accuracy	
	°C		°F		°C	°F
	From	To	From	To		
Pt10	-200	-80	-328	-112	0.198	0.357
alpha 385	-80	0	-112	32	0.210	0.378
	0	100	32	212	0.224	0.403
	100	155	212	311	0.225	0.405
	155	320	311	608	0.234	0.422
	320	420	608	788	0.250	0.450
	420	660	788	1220	0.263	0.473
	660	800	1220	1472	0.292	0.525
Pt50	-200	-80	-328	-112	0.042	0.076
alpha 385	-80	0	-112	32	0.046	0.083
	0	100	32	212	0.051	0.091
	100	155	212	311	0.052	0.093
	155	320	311	608	0.057	0.102
	320	420	608	788	0.062	0.112
	420	660	788	1220	0.069	0.124
	660	800	1220	1472	0.078	0.141
Pt100	-200	-80	-328	-112	0.023	0.041
alpha 385	-80	0	-112	32	0.026	0.046
	0	100	32	212	0.029	0.052
	100	155	212	311	0.030	0.054
	155	320	311	608	0.034	0.062
	320	420	608	788	0.038	0.069
	420	660	788	1220	0.044	0.080
	660	800	1220	1472	0.052	0.093
Pt200	-200	-80	-328	-112	0.247	0.445
alpha 385	-80	0	-112	32	0.262	0.471
	0	100	32	212	0.278	0.500
	100	155	212	311	0.279	0.502
	155	320	311	608	0.290	0.522
	320	420	608	788	0.309	0.556
	420	660	788	1220	0.323	0.582
	660	800	1220	1472	0.358	0.645
Pt500	-200	-80	-328	-112	0.101	0.182
alpha 385	-80	0	-112	32	0.108	0.194
	0	100	32	212	0.116	0.208
	100	155	212	311	0.117	0.210
	155	320	311	608	0.123	0.222
	320	420	608	788	0.133	0.239
	420	660	788	1220	0.141	0.254
	660	800	1220	1472	0.158	0.285
Pt1000	-200	-80	-328	-112	0.052	0.094
alpha 385	-80	0	-112	32	0.056	0.102
	0	100	32	212	0.062	0.111
	100	155	212	311	0.063	0.113
	155	320	311	608	0.068	0.122
	320	420	608	788	0.074	0.133
	420	660	788	1220	0.081	0.145
	660	800	1220	1472	0.092	0.165
M50	-200	-80	-328	-112	0.039	0.070
alpha 428	-80	0	-112	32	0.042	0.076
	0	100	32	212	0.045	0.081
	100	155	212	311	0.045	0.081
	155	200	311	392	0.046	0.083
M100	-200	-80	-328	-112	0.021	0.038
alpha 428	-80	0	-112	32	0.023	0.041
	0	100	32	212	0.026	0.047
	100	155	212	311	0.026	0.047
	155	200	311	392	0.027	0.049

B Model Temperature Specifications

TC Type	Temperature range				12 month accuracy	
	°C		°F		°C	°F
	From	To	From	To		
B	250	320	482	608	1.31	2.35
	320	420	608	788	0.99	1.77
	420	660	788	1220	0.65	1.17
	660	800	1220	1472	0.56	1.01
	800	1000	1472	1832	0.44	0.78
	1000	1200	1832	2192	0.41	0.74
	1200	1400	2192	2552	0.39	0.70
	1400	1600	2552	2912	0.38	0.69
	1600	1820	2912	3308	0.40	0.72
E	-250	-200	-418	-328	0.74	1.34
	-200	-100	-328	-148	0.18	0.32
	-100	0	-148	32	0.09	0.17
	0	155	32	311	0.06	0.11
	155	320	311	608	0.06	0.12
	320	420	608	788	0.07	0.12
	420	660	788	1220	0.08	0.14
	660	800	1220	1472	0.09	0.16
	800	1000	1472	1832	0.10	0.19
J	-210	-100	-346	-148	0.23	0.41
	-100	0	-148	32	0.10	0.18
	0	155	32	311	0.08	0.14
	155	320	311	608	0.09	0.16
	320	420	608	788	0.09	0.17
	420	660	788	1220	0.09	0.17
	660	800	1220	1472	0.09	0.17
	800	1000	1472	1832	0.11	0.21
	1000	1200	1832	2192	0.13	0.23
K	-250	-200	-418	-328	0.94	1.69
	-200	-100	-328	-148	0.27	0.49
	-100	0	-148	32	0.14	0.24
	0	155	32	311	0.10	0.19
	155	320	311	608	0.11	0.20
	320	420	608	788	0.11	0.20
	420	660	788	1220	0.13	0.23
	660	800	1220	1472	0.14	0.24
	800	1000	1472	1832	0.15	0.28
	1000	1200	1832	2192	0.17	0.31
	1200	1372	2192	2501,6	0.20	0.36
N	-250	-200	-418	-328	1.37	2.47
	-200	-100	-328	-148	0.41	0.74
	-100	0	-148	32	0.20	0.35
	0	155	32	311	0.15	0.27
	155	320	311	608	0.13	0.23
	320	420	608	788	0.12	0.22
	420	660	788	1220	0.13	0.23
	660	800	1220	1472	0.14	0.24
	800	1000	1472	1832	0.15	0.27
	1000	1200	1832	2192	0.16	0.29
	1200	1300	2192	2372	0.17	0.31

TC Type	Temperature range				12 month accuracy	
	°C		°F		°C	°F
	From	To	From	To		
R	-50	0	-58	32	1.30	2.35
	0	155	32	311	0.78	1.40
	155	320	311	608	0.47	0.84
	320	420	608	788	0.40	0.73
	420	660	788	1220	0.39	0.70
	660	800	1220	1472	0.35	0.63
	800	1000	1472	1832	0.36	0.64
	1000	1200	1832	2192	0.34	0.61
	1200	1400	2192	2552	0.34	0.60
	1400	1600	2552	2912	0.35	0.62
	1600	1768	2912	3214,4	0.41	0.74
S	-50	0	-58	32	0.98	1.76
	0	155	32	311	0.78	1.40
	155	320	311	608	0.49	0.89
	320	420	608	788	0.45	0.81
	420	660	788	1220	0.41	0.73
	660	800	1220	1472	0.40	0.72
	800	1000	1472	1832	0.39	0.70
	1000	1200	1832	2192	0.38	0.69
	1200	1400	2192	2552	0.38	0.69
	1400	1600	2552	2912	0.39	0.71
	1600	1768	2912	3214,4	0.46	0.83
T	-250	-200	-418	-328	0.65	1.17
	-200	-100	-328	-148	0.27	0.49
	-100	0	-148	32	0.15	0.26
	0	155	32	311	0.10	0.18
	155	320	311	608	0.08	0.15
	320	400	608	752	0.08	0.14

ORDERING INFORMATION

8085-ASM801:
Scanner with 8 universal screw plugs

8085-ASM801B:
Scanner with 8 universal screw plugs and built-in measuring circuit.

8085-ASM802: Scanner with 8 TC plugs
8085-ASM802B: Scanner with 8 TC plugs and built-in measuring circuit.

8085-ASM803: Scanner with 8 LEMO plugs
8085-ASM803B: Scanner with 8 LEMO plugs and built-in measuring circuit.

Supplied with traceable calibration certificate and carry case. Mains adapter, RS-232 cable, Jofracal software, Jofralog software (B models only), user manual.

Options:
Accredited calibration (ISO 17025)
EasyCal Calibration Software