M300 Series
Data Acquisition Switch System

M300시리즈는 데이터 획득/스위치 시스템이며 신호연결의 유연성,정밀측정 능력을 가지고 있으며, 다점 혹은 제품성능 시험에 테스트할 신호등의 다양한 응용에 대한 솔루션을 제공한다.

- ✓ 최대연결 가능 채널 : 320 CH
- ✓ PC 없이 자체적으로 동작 가능
- ✓ Reading : 100,000 times/s
- ✓ 11가지의 카드 종류 지원
- ✓ 6.5디지트의 DMM기능
- ✓ 표준 SCPI 명령어 지원
- ✓ 연산기능 :AVG,MAX,MIN,SDEV
- ✓ 4.3inch LCD with GUI
- ✓ PC software 및 웹제어
- ✓다양한 트리거 지원
- ✓ Interface: USB Host& Device, LAN(LXI-C), RS232C,GPIB

M300 Series Data Acquisition System

Width X Height X Depth = 239mm X 159.0 mm X 373.4mm Weight: 5.7 kg ± 0.2 kg (Without Package)

✦ 주요특징 및 장점

*채널설정 안내

측정설정

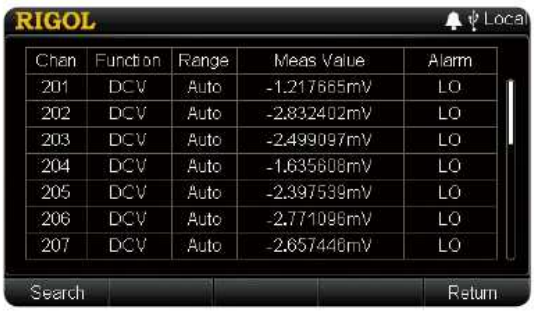
눈금(스케일) 설정

알람 설정

고급(Advanced)설정

*채널모니터

한 채널 모니터

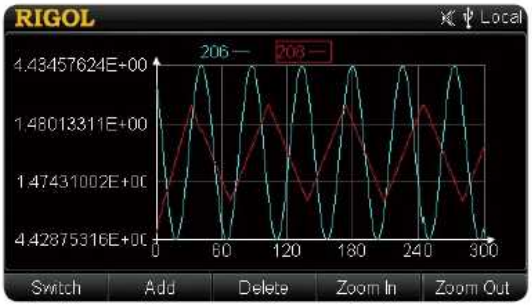


다채널/모든 채널 모니터

*멀티뷰(multi view)모니터

실시간 스캔정보와 선택한 채널의 모든 측정 데이터표시

실시간채널상태 표시



스캔데이터 곡선그리기

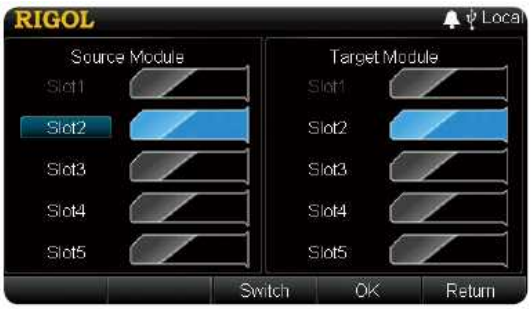
모듈별 사이클 기록

알람 정보

에러 정보

*다채널 복사(Copy) 기능

다채널 구성 복사/모듈/채널/다채널 확장

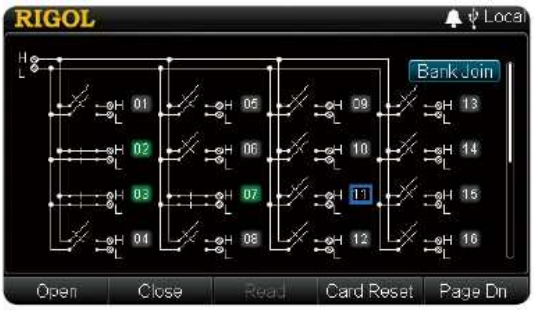


모듈 복사

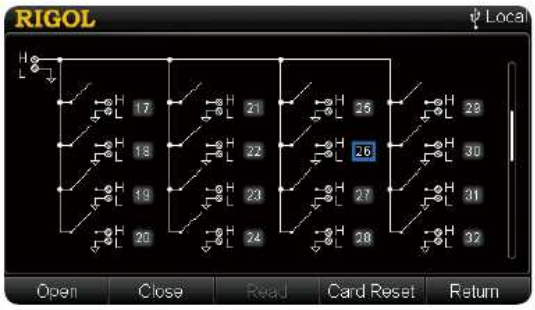
채널 복사

확장 복사

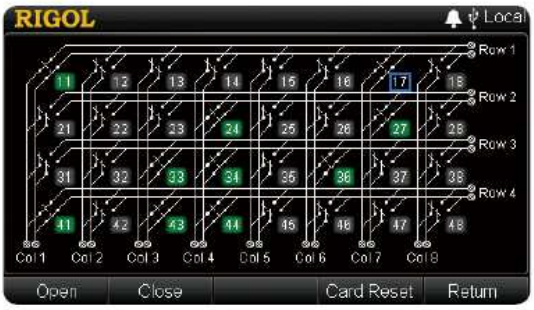
각 모듈별 독립적 제어



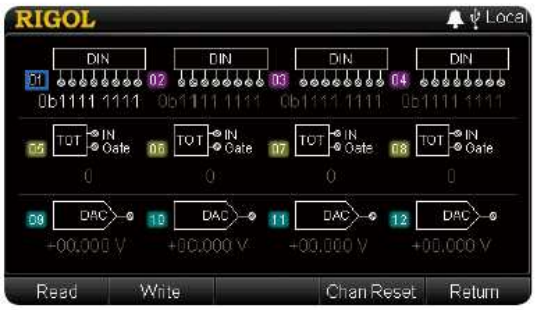
MC3132 제어 화면



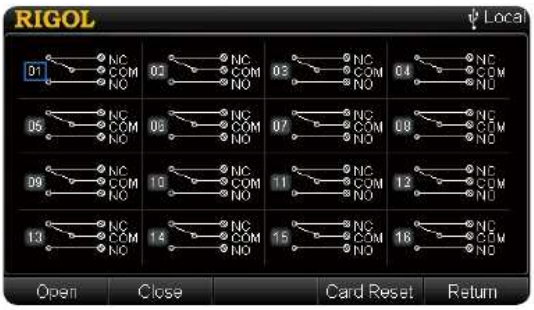
MC3164 제어 화면



MC3648 제어 화면



MC3534 제어 화면



MC3416 제어 화면

PC software(Ultra Acquire Pro) :채널구성

데이터분석

M300 모듈과 단자박스

Module	Terminal Box	설명
 DMM- MC3065		◆ DMM 모듈 ◆ 신호측정 ◆6.5디지트 ◆DCV,ACV,DCI,ACI,2WR,Freq,Period, TEMP,센서등 지원 ◆DMM모듈 연결후 아날로그 버스에 연결한 신호의 크기는 300Vrms보다 적어야 함.
 MUX20-MC3120	 TB20	◆20채널 멀티플렉서 ◆20채널 모두 Hi 와 LO입력 전환 ◆4선식 측정 지원 ◆ 측정할 신호는 TB20터미널박스를 통하여 연결 ◆ MC3065로 연결 가능
 MUX32-MC3132	 TB32	◆32채널 멀티플렉서 ◆32채널 모두 Hi 와 LO입력 전환 ◆4선식 측정 지원 ◆ 측정할 신호는 TB32터미널박스를 통하여 연결 ◆ MC3065로 연결 가능
 MUX64-MC3164	 TB64	◆ 64채널 싱글엔드 멀티플렉서 ◆ 64채널 모두 Hi입력만 가능 ◆ 4선식 지원 안됨 ◆ 측정할 신호는 TB64터미널박스를 통하여 연결 ◆ MC3065로 연결 가능
 REEDMUX32-MC3232	 TB32	◆32채널 멀티플렉서 ◆32채널 모두 Hi 와 LO입력 전환 ◆4선식 측정 지원 ◆ 측정할 신호는 TB32터미널박스를 통하여 연결 ◆ MC3065로 연결 가능
 REEDMUX32-MC3264	 TB64	◆ 64채널 싱글엔드 멀티플렉서 ◆ 64채널 모두 Hi입력만 가능 ◆ 4선식 지원 안됨 ◆ 측정할 신호는 TB64터미널박스를 통하여 연결 ◆ MC3065로 연결 가능

 MIX24-MC3324	 TB24	◆ 혼합멀티플렉서 : 20개 전압과 4채널 전류 ◆ 20개 모든 전압채널은 Hi와 LO ◆20개 전압채널은 4선 측정 지원 ◆4개 전류채널은 DC와AC전류 지원 ◆ 측정할 신호는 TB24터미널박스를 통하여 연결 ◆ MC3065로 연결 가능
 ACT-MIC3416	 TB16	◆16채널 작동장치(액츄에이터) ◆ 측정할 장치 혹은 외부장치에 신호 연결 가능 ◆ 16개의 채널 중 어떤 채널이든 NO(Normally Open) 와 NC(normally Close) 상태 전환 가능 ◆ 측정할 신호는 TB16터미널박스를 통하여 연결
 MFC-MC3534	 TB34	◆다기능 모듈 ◆DIO : 4개의 8비트 디지털 I/O ◆TOT : 4개 토탈라이저 입력단자 ◆DAC : 4개의 아날로그 출력단자 ◆ 측정할 신호는 TB34터미널박스를 통하여 연결
 MATRIX –MC3648		◆4x8 2선 매트릭스 스위치 ◆측정하고자 하는 다점에 복수연결 장치 연결하는데 사용 ◆동시에 입력 출력 조합한 아무것이나 연결 가능한 32 개의 2선 교차점 ◆ 측정할 신호는 TB48터미널박스를 통하여 연결
 RFMUX-MC3724		◆ 두개의 4채널 RF멀티플렉서 ◆ 두개의 4- to-1 멀티플렉서로 구성 고주파 혹은 펄스 신호를 전환

✦ Specifications

DC Characteristics

Accuracy Specifications: ± (% of reading + % of range)[1]

Function	Range[2]	Test Current or Load Voltage	24 Hour[3] TCAL℃ ±1℃	90 Day TCAL℃ ±5℃	1 Year TCAL℃ ±5℃	Temperature Coefficient 0℃ to (TCAL℃ −5℃) (TCAL℃ +5℃) to 50℃
DC Voltage	200.0000mV	–	0.0020+ 0.0020	0.0030 + 0.0025	0.0040 + 0.0025	0.0005 + 0.0005
	2.000000V	–	0.0015 + 0.0005	0.0020 + 0.0006	0.0035 + 0.0006	0.0005 + 0.0001
	20.00000V	–	0.0020 + 0.0004	0.0030 + 0.0005	0.0040 + 0.0005	0.0005 + 0.0001
	200.0000V	–	0.0020 + 0.0006	0.0040 + 0.0006	0.0050 + 0.0006	0.0005 + 0.0001
	300.000V	–	0.0020 + 0.0006	0.0040 + 0.0010	0.0055 + 0.0010	0.0005 + 0.0001
DC Current	200.0000 µA	<0.03V	0.010 + 0.012	0.040 + 0.015	0.050 + 0.015	0.0020 + 0.0030
	2.000000mA	<0.25V	0.007 + 0.003	0.030 + 0.003	0.050 + 0.003	0.0020 + 0.0005
	20.00000mA	<0.07V	0.007 + 0.012	0.030 + 0.015	0.050 + 0.015	0.0020 + 0.0020
	200.0000mA	<0.7V	0.010 + 0.002	0.030 + 0.003	0.050 + 0.003	0.0020 + 0.0005
	1.000000A	<0.12V	0.050 + 0.020	0.080 + 0.020	0.100 + 0.020	0.0050 + 0.0010
Resistance[4]	200.0000Ω	1mA	0.0030 + 0.0030	0.008 + 0.004	0.010 + 0.004	0.0006 + 0.0005
	2.000000kΩ	1mA	0.0020 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0006 + 0.0001
	20.00000kΩ	100 µA	0.0020 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0006 + 0.0001
	200.0000kΩ	10 µA	0.0020 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0006 + 0.0001
	1.000000MΩ	2 µA	0.002 + 0.001	0.010 + 0.001	0.012 + 0.001	0.0010 + 0.0002
	10.00000MΩ	200nA	0.015 + 0.001	0.030 + 0.001	0.040 + 0.001	0.0030 + 0.0004
		200nA ‖ 10MΩ	0.300 + 0.010	0.800 + 0.010	0.800 + 0.010	0.1500 + 0.0002

Measuring Characteristics

DC Voltage	
Input Impedance	200mV, 2V, 20V ranges: 10MΩ or >10GΩ (For these ranges, input beyond ±26 V are clamped through 106 kΩ)
	200V and 300V ranges: 10MΩ ±1%
Input Protection	300V
Input Offset Current	50pA, at 25℃, typical
CMRR (common mode rejection ratio)	140 dB for 1 kΩ unbalanced resistance in LO lead, ±300 VDC peak maximum.
Resistance	
Measurement Method	4-wire or 2-wire resistance Current source referenced to LO input
Open-circuit Voltage	Limited to <10 V
Max. Lead Resistance (4-wire)	10% of range per lead for 200 Ω and 2 kΩ ranges, 1 kΩ per lead on all other ranges
Input Protection	300V on all ranges
Offset Compensation	Available on 200 Ω, 2 kΩ and 20 kΩ ranges.
DC Current	
Shunt Resistor	100 Ω for 200 uA, 2 mA
	1 Ω for 20 mA, 200 mA
	0.01 Ω for 2 A, 10 A
Auto Zero OFF Operation (typical value)	
Following instrument warm-up at the environment temperature ±1℃ and <5 minutes, add 0.0001 % range + 2 uV error for DCV and 2 mΩ error for resistance.	
Settling Considerations	
Reading settling times are affected by source impedance, cable dielectric characteristics and input signal changes. The default measurement delay can ensure the correctness of the first reading for most measurements.	
Measurement Considerations	
Teflon or other high-impedance, low-dielectric absorption wire insulation is recommended for these measurements.	

AC Characteristics

Accuracy Specifications: ± (% of reading + % of range)[1]

Function	Range[2]	Frequency Range	24 Hour[3] TCAL℃ ±1℃	90 Day T_{CAL}℃ ±5℃	1 Year T_{CAL}℃ ±5℃	Temperature Coefficient 0℃ to (TCAL℃ -5℃) (TCAL℃ +5℃) to 50℃
True RMS AC Voltage[4]	200.0000mV	3Hz- 5Hz	1.00 + 0.03	1.00 + 0.04	1.00 + 0.04	0.100 + 0.004
		5Hz-10Hz	0.35 + 0.03	0.35 + 0.04	0.35 + 0.04	0.035 + 0.004
		10Hz-20kHz	0.04 + 0.03	0.05 + 0.04	0.06 + 0.04	0.005 + 0.004
		20kHz-50kHz	0.10 + 0.05	0.11 + 0.05	0.12 + 0.05	0.011 + 0.005
		50kHz-100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
		100kHz- 300kHz	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	0.20 + 0.02
	2.000000V	3Hz-5Hz	1.00 + 0.02	1.00 + 0.03	1.00 + 0.03	0.100 + 0.003
		5Hz-10Hz	0.35 + 0.02	0.35 + 0.03	0.35 + 0.03	0.035 + 0.003
		10Hz-20kHz	0.04 + 0.02	0.05 + 0.03	0.06 + 0.03	0.005 + 0.003
		20kHz-50kHz	0.10 + 0.04	0.11 + 0.05	0.12 + 0.05	0.011 + 0.005
		50kHz-100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
		100kHz-300kHz	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	0.20 + 0.02
	200.0000V	3Hz-5Hz	1.00 + 0.02	1.00 + 0.03	1.00 + 0.03	0.100 + 0.003
		5Hz-10Hz	0.35 + 0.02	0.35 + 0.03	0.35 + 0.03	0.035 + 0.003
		10Hz-20kHz	0.04 + 0.02	0.07 + 0.03	0.08 + 0.03	0.008 + 0.003
		20kHz-50kHz	0.10 + 0.04	0.12 + 0.05	0.15 + 0.05	0.012 + 0.005
		50kHz-100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
		100kHz-300kHz	4.0 + 0.50	4.0 + 0.50	4.0 + 0.50	0.20 + 0.02
	300.000V	3Hz-5Hz	1.00 + 0.02	1.00 + 0.03	1.00 + 0.03	0.100 + 0.003
		5Hz-10Hz	0.35 + 0.02	0.35 + 0.03	0.35 + 0.03	0.035 + 0.003
		10Hz-20kHz	0.04 + 0.02	0.07 + 0.03	0.08 + 0.03	0.008 + 0.003
		20kHz-50kHz	0.10 + 0.04	0.12 + 0.05	0.15 + 0.05	0.012 + 0.005
		50kHz-100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
		100kHz-300kHz	4.0 + 0.50	4.0 + 0.50	4.0 + 0.50	0.20 + 0.02

True RMS AC Current[6]	200.0000 µ A	3Hz–5Hz	1.10 + 0.06	1.10 + 0.06	1.10 + 0.06	0.200 + 0.006
		5Hz–10Hz	0.35 + 0.06	0.35 + 0.06	0.35 + 0.06	0.100 + 0.006
		10Hz–5kHz	0.15 + 0.06	0.15 + 0.06	0.15 + 0.06	0.015 + 0.006
		5kHz–10kHz	0.35 + 0.70	0.35 + 0.70	0.35 + 0.70	0.030 + 0.006
	2.000000mA	3Hz–5Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006
		5Hz–10Hz	0.30 + 0.04	0.30 + 0.04	0.30 + 0.04	0.035 + 0.006
		10Hz–5kHz	0.12 + 0.04	0.12 + 0.04	0.12 + 0.04	0.015 + 0.006
		5kHz–10kHz	0.20 + 0.25	0.20 + 0.25	0.20 + 0.25	0.030 + 0.006
	20.00000mA	3Hz–5Hz	1.10 + 0.06	1.10 + 0.06	1.10 + 0.06	0.200 + 0.006
		5Hz–10Hz	0.35 + 0.06	0.35 + 0.06	0.35 + 0.06	0.100 + 0.006
		10Hz–5kHz	0.15 + 0.06	0.15 + 0.06	0.15+ 0.06	0.015 + 0.006
		5kHz–10kHz	0.35 + 0.70	0.35 + 0.70	0.35 + 0.70	0.030 + 0.006
	200.0000mA	3Hz–5Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006
		5Hz–10Hz	0.30 + 0.04	0.30 + 0.04	0.30 + 0.04	0.035 + 0.006
		10Hz–5kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006
		5kHz–10kHz	0.20 + 0.25	0.20 + 0.25	0.20 + 0.25	0.030 + 0.006
	1.000000A	3Hz–5Hz	1.10 + 0.06	1.10 + 0.06	1.10 + 0.06	0.100 + 0.006
		5Hz–10Hz	0.35 + 0.06	0.35 + 0.06	0.35 + 0.06	0.035 + 0.006
		10Hz–5kHz	0.15 + 0.06	0.15 + 0.06	0.15 + 0.06	0.015 + 0.006
		5kHz–10kHz	0.35 + 0.70	0.35 + 0.70	0.35 + 0.70	0.030 + 0.006
		5Hz–10Hz	0.35 + 0.08	0.35 + 0.10	0.35 + 0.10	0.035 + 0.008
		10Hz–5kHz	0.15 + 0.08	0.15 + 0.10	0.15 + 0.10	0.015 + 0.008

NOTE: [1] Specifications are for 90–minute warm–up, slow ac filter and sine wave input.
[2] 10% overrange on all ranges.
[3] Relative to calibration standards.
[4] Specifications are for sine wave input >5% of range. For inputs from 1% to 5% of range and <50 kHz, add 0.1% of range additional error. For 50 kHz to 100 kHz, add 0.13% of range.
[5] When the frequency is lower than 100 Hz, the specification of slow filter is only for sine wave input.
[6] Specifications are for sine wave input >5% of range. For inputs from 1% to 5% of range, add 0.1% of range additional error. Specifications are typical values for 200 uA, 2 mA, 2 A and 10 A ranges when frequency is >1 kHz.

Measuring Characteristics

True RMS AC Voltage	
Measurement Method	AC–coupled True–RMS –– measure the ac component of input with up to 300 V DC bias on any range.
Crest Factor	≤ 5 at full range
Input Impedance	1 MΩ ± 2%, in parallel with <150 pF capacitance on any range
Input Protection	300 V rms on all ranges
AC Filter Bandwidth	Slow: 3 Hz – 300 kHz
	Medium: 20 Hz – 300 kHz
	Fast: 200 Hz – 300 kHz
CMRR (common mode rejection ratio)	70 dB, for the 1 kΩ unbalance in LO lead, <60 Hz common mode signal frequency, ±500 VDC peak maximum.
True RMS AC Current	
Measurement Method	Direct coupled to the fuse and shunt; AC–coupled True RMS measurement (measure the AC component).
Crest Factor	≤ 3 at full range
Max. Input	DC + AC current peak value <300% of range. Current with DC current component <10 A rms.
Shunt Resistor	100 Ω for 200 uA, 2 mA
	1 Ω for 20 mA , 200 mA
	0.01 Ω for 1 A
Settling Time Considerations	
The default measurement delay of the multimeter can ensure the correctness of the first readings of most of the measurements. Make sure the RC circuit of input terminal has been fully settled (about 1 s) before accurate measurement.	

Frequency and Period Characteristics

Accuracy Specifications: ± (% of reading)[1][2]

Function	Range	Frequency Range	24 Hour[3] T_{CAL}℃ ±1℃	90 Day T_{CAL}℃ ±5℃	1 Year T_{CAL}℃ ±5℃	Temperature Coefficient 0℃ to (T_{CAL}℃ −5℃) (T_{CAL}℃ +5℃) to 50℃
Frequency, Period	200mV–300V	3 Hz–5 Hz	0.07	0.07	0.07	0.005
		5 Hz–10 Hz	0.04	0.04	0.04	0.005
		10 Hz–40 Hz	0.02	0.02	0.02	0.001
		40 Hz–300 kHz	0.005	0.006	0.007	0.001
		300 kHz–1 MHz	0.005	0.006	0.007	0.001

Additional Low Frequency Errors: (% of reading)

Frequency	Gate Time (Resolution)			
	1s (0.1ppm)	0.1s (1ppm)	0.01s (10ppm)	0.001s (100ppm)
3 Hz–5Hz	0	0.12	0.12	0.12
5 Hz–10Hz	0	0.17	0.17	0.17
10 Hz–40Hz	0	0.20	0.20	0.20
40 Hz–100Hz	0	0.06	0.21	0.21
100 Hz–300Hz	0	0.03	0.21	0.21
300 Hz–1 kHz	0	0.01	0.07	0.07
>1kHz	0	0	0.02	0.02

NOTE: [1] Specifications are for 90 minutes warm–up and 1 s gate time.
[2] For frequency < 300 kHz, the specification is for AC input voltage of 10% to 110% of range. For frequency >300 kHz, the specification is for AC input voltage of 20% to 110% of range. The maximum input is limited to 750 Vrms or 8 x 107 Volts–Hz (whichever is less). 200 mV range is full range input or input that is larger than the full range. For 20 mV to 200 mV inputs, multiply % of reading error by 10.
[3] Relative to calibration standards.

Measuring Characteristics

Frequency and Period	
Measurement Method	Reciprocal–counting technique, AC–coupled input using the AC voltage function.
Input Impedance	1 MΩ ± 2%, in parallel with <150 pF capacitance on any range
Input Protection	300 Vrms on all ranges

Measurement Considerations

All frequency counters are susceptible to error when measuring low–voltage, low–frequency signals. Shielding inputs from external noise pickup is critical for minimizing measurement errors.

Settling Considerations

Errors will occur when attempting to measure the frequency or period of an input following a dc offset voltage change. The input blocking RC time constant must be allowed to fully settle (about 1 s) before the most accurate measurements are possible.

Temperature Characteristics

Accuracy Specifications[1]

Function	Probe Type	Type	Optimum Range	1 Year T_{CAL}℃ ±5℃	Temperature Coefficient 0℃ to (T_{CAL}℃ −5℃) (T_{CAL}℃ +5℃) to 50℃
Temperature	RTD[2](R0 is within 49 Ω and 2.1 kΩ)	α =0.00385	−200℃ – 660℃	0.16℃	0.01℃
		α =0.00389	−200℃ – 660℃	0.17℃	0.01℃
		α =0.00391	−200℃ – 660℃	0.14℃	0.01℃
		α =0.00392	−200℃ – 660℃	0.15℃	0.01℃
	Thermal Resistance	2.2 kΩ	−40℃ – 150℃	0.08℃	0.002℃
		3 kΩ	−40℃ – 150℃	0.08℃	0.002℃
		5 kΩ	−40℃ – 150℃	0.08℃	0.002℃
		10 kΩ	−40℃ – 150℃	0.08℃	0.002℃
		30 kΩ	−40℃ – 150℃	0.08℃	0.002℃
	Thermocouple[3]	B	0℃ – 1820℃	0.76℃	0.14℃
		E	−270℃ – 1000℃	0.5℃	0.02℃
		J	−210℃ – 1200℃	0.5℃	0.02℃
		K	−270℃ – 1372℃	0.5℃	0.03℃
		N	−270℃ – 1300℃	0.5℃	0.04℃
		R	−50℃ – 1768.1℃	0.5℃	0.09℃
		S	−50℃ – 1768.1℃	0.6℃	0.11℃
		T	−270℃ – 400℃	0.5℃	0.03℃

NOTE: [1] Specifications are for 90 minutes warm–up. Probe error excluded.
[2] Specification is for 4WR resistance measurement.
[3] Relative to cold junction temperature, accuracy is based on ITS–90. Built–in cold junction temperature refers to the temperature inside the banana jack and its accuracy is ±2.5 ℃.

Measuring Characteristics

Thermocouple	
Conversion	ITS-90 software compensation
Reference Junction Type	Internal, Fixed, or External
T/C Check	Selectable per channel. When the channel resistance is >5kΩ, it is considered as Open.
RTD	
Alpha	= 0.00385 (DIN/IEC 751): using ITS-90 software compensation; = 0.00389, 0.00391 or 0.00392: using IPTS-68 software compensation
Thermistor	
	44004, 44007, 44006 series

Measurement Considerations

The built-in cold junction temperature tracks the temperature inside the terminal box. The change of temperature in the terminal box might cause additional error. When using the built-in cold junction compensation, connect the sensor terminal of the thermocouple to the terminal box and warm it up for more than 3 minutes to minimize the error.

Module Specifications

MC3132/MC3164/MC3324/MC3648

	Multiplexer			Matrix
General	MC3132	MC3164	MC3324	MC3648
Number of Channels	32	64	20 Voltage+4 Current	4×8
	2/4 wire	2 wire	2/4 wire	2 wire
Connect to DMM Module?	Yes	Yes	Yes	No
Scanning Speed[1]	60Ch/s	60Ch/s	60Ch/s	——
Open/Close Speed	200Ch/s	200Ch/s	200Ch/s	200Ch/s
Maximum Input				
Voltage (DC, AC rms)	300Vrms	300Vrms	300Vrms	300Vrms
Current (DC, AC rms)	1Arms	1Arms	1Arms	1Arms
Power (W, VA)	50VA	50VA	50VA	50VA
Isolation (ch-ch, ch-earth) (DC, AC rms)	300Vrms	300Vrms	300Vrms	300Vrms
DC Characteristics				
Offset Voltage	5uV	5uV	5uV	5uV
Initial Closed Channel Resistance	<1Ω	<1Ω	<1Ω	<1Ω
Isolation (ch-ch, ch-earth)	>10GΩ	>10GΩ	>10GΩ	>10GΩ
AC Characteristics				
Bandwidth	1MHz	1MHz	1MHz	1MHz
Ch-Ch Cross Talk (dB)[2]	-45	-18[3]	-45	-18
1MHz	100pF	100pF	100pF	100pF
Capacitance HI-LO	200pF	200pF	200pF	200pF
Capacitance LO-Earth	10^8	10^8	10^8	10^8
Other				
T/C Cold Junction Accuracy (Typical)	0.8℃	0.8℃ [4]	0.8℃	——
Switch Life (No Load) (Typical)	100M	100M	100M	100M
Switch Life (Rated Load) (Typical) [5]	100K	100K	100K	100K
Operating Temperature	0℃ – 55℃	0℃ – 55℃	0℃ – 55℃	0℃ – 55℃
Storage Temperature	-20℃ – 70℃	-20℃ – 70℃	-20℃ – 70℃	-20℃ – 70℃
Humidity (non-condensing)	40℃ / 80% RH	40℃ / 80% RH	40℃ / 80% RH	40℃ / 80% RH

NOTE: [1] Integration time: 0.02PLC, channel delay: 0; auto zero: off; alarm: off; scaling: off; display: off; data to internal memory.
[2] 50Ω load
[3] Isolation within banks is -40dB
[4] Specifications are for the LO setting and not the temperature of the cold terminal
[5] Applies to resistive loads only

MC3534

Digital Input/Output (DIO)					
Port 1,2,3,4	8-bit, input or output, non-isolated				
Type	Vin(L)	Vin(H)	Vout(L)	Vout(H)	Vin(H) Max
TTL	<0.8V	>2.0V	<0.2V@I_{out}=-500mA	>4.8V@I_{out}=1mA	<42V with external open drain pull-up
5V CMOS	<1.5V	>3.5V	<0.2V@I_{out}=-500mA	>4.8V@I_{out}=1mA	
3.3V CMOS	<1.0V	>2.3V	<0.2V@I_{out}=-500mA	>3.15V@I_{out}=1mA	
2.5V CMOS	<0.75V	>1.75V	<0.2V@I_{out}=-500mA	>2.35V@I_{out}=1mA	
User defined	Threshold-0.3V	Threshold+0.3V	<0.2V@I_{out}=-500mA	>(Level-0.2V)@I_{out}=1mA	
Alarming	Match or mismatch, maskable				Match or mismatch, maskable
Speed	4ms (Max) alarm sampling				4ms (Max) alarm sampling
Latency	5ms				5ms
Read/Write Speed	100 次 /s				100 次 /s

Totalizer Input (TOT)		
	High Speed (TOT1,TOT2)	Normal Speed (TOT3,TOT4)
Maximum Count	2^{32}-1	2^{32}-1
Totalizer Input	10MHz (max), rising or falling edge, programmable	100kHz (max), rising or falling edge, programmable
Signal Level	CMOS 3.3V,5V tolerable	1Vp-p(min),42Vpk(max), Vcm=-12V-+12V
Threshold	Fixed at CMOS 3.3V	-12V-+12V，可编程
Gated Input	CMOS 3.3V-Hi, CMOS 3.3V-Lo or none, 5V tolerance	CMOS 3.3V-Hi, CMOS 3.3V-Lo or none, 5V tolerance
Count Reset	Manual or Read + Reset	100 次 /s
Read Speed	100/s	

Analog Voltage Output (DAC)	
DAC 1,2,3,4	±12V, non-isolated (earth referenced)
Resolution	1mV
Iout	10mA max[1]
Setting Time	1ms to 0.01 % of output
Accuracy 1 year ± 5℃	± (% of output + mV) 0.25%+20mV
Temp Coefficient	± (0.015%+1mV)/℃

NOTE: [1] No limit for 5 slots (20 DAC channels)

General Specifications

Power Supply	4.3 inches
Power Consumption	AC 100V – 120V, 45Hz – 440Hz AC 200V – 240V, 45Hz – 66Hz Detect the power frequency automatically at power-on, 400 Hz defaults to 50 Hz
Working Environment	25 VA Max
Storage Temperature	Full accuracy for 0℃ to 50℃ Full accuracy to 80% R.H. at 40℃ Non-coagulation
Operation Altitude	-40℃ to 70℃
Safety	Up to2000m
EMC	IEC 61010-1; EN 61010-1; UL 61010-1; CAN/CSA-C22.2 No. 61010-1 Measurement CAT I 1000V/CAT II 300V Pollution Degree 2
Weight	EN 61326-1
Dimension	About 5.7 kg (without package)
Remote Interface	(height × width × length): 159.0mm × 239.0mm × 373.4mm
Programming Language	GPIB, 10/100Mbit LAN, USB 2.0 Full Speed Device & Host (support USB storage device), RS-232
LXI Compatibility	SCPI
Warm-up Time	LXI Core Device 2011，Version 1.4
Power Supply	90 minutes

▶ Ordering Information

	Description	Ordering No.
Mainframe	Data Acquisition/Switch System	M300
	Data Acquisition/Switch System + DMM Module	M301
Standard Accessories	Power Cord conforming to the standard of the country	–
	USB Cable	CB-USBA-USBB-FF-150
	Mixed-interface Separator Line	MIX-SEPARATOR
	Four Spare Fuses: 2 AC, 250 V, T3.15 A fuses 2 AC, 250 V, T250 mA fuses	–
	Quick Guide	–
	Resource CD (User's Guide and Application Software)	–
Optional Accessories: Module	DMM Module (6½ digits)	MC3065
	20-channel Multiplexer	MC3120
	32-channel Multiplexer	MC3132
	64-channel Single-ended Multiplexer	MC3164
	32-channel Reed Multiplexer	MC3232
	64-channel Single-ended Reed Multiplexer	MC3264
	20-voltage-channel+4-current-channel Mixed Multiplexer	MC3324
	16-channel Actuator	MC3416
	Multifunction Module	MC3534
	4 × 8 Matrix Switch	MC3648
	Dual 4-channel RF Multiplexer	MC3724
Optional Accessories: Terminal Box	MC3120 Terminal Box	M3TB20
	MC3132/ MC3232 Terminal Box	M3TB32
	MC3164/MC3264 Terminal Box	M3TB64
	MC3324 Terminal Box	M3TB24
	MC3648 Terminal Box	M3TB48
	MC3534 Terminal Box	M3TB34
	MC3416 Terminal Box	M3TB16
Optional Accessories	RS232 Cable	–
	External Port for Analog Bus Interface	A-BUS-EXT-PORT
	Rack Mount Kit	RM-1-M300
	Rack Mount Kit for Two Instruments	RM-2-M300
	PC Software for M300 Series	Ultra Acquire