Maxiflex M1000 Series RTU System

Programmable Remote Terminal Unit Systems

M1000 Series

SHORTFORM

- No programming required for Telemetry and Data Acquisition.
- Hot Plug-In with AutoScan I/O.
- Choice of communications - Ethernet/Conet /RS232/485 Serial/GSM/Radio.
- Up to 15 I/O modules per Network node.
- Complex Communications topologies made easy



Features

- Modular design with optional base sizes
- AC, DC or solar powered with battery charging options
- Range of digital and analogue I/O modules (8, 16, 32 and 64 channel)
- Hot plug-in design I/O Modules
- RS232/485 gateways for 3rd party device interfacing (e.g. PLCs)
- Programmable NIMs (network interface modules) for expansion to other networks or interface to 3rd party devices or complex network topologies
- Hot Standby CPU Technology

Overview

Maxiflex is a programmable Remote Terminal Unit system designed for industrial data acquisition and control applications, and can be used in many diverse applications, including front ends for SCADA/DCS. It features a strong flexible communications infrastructure with a variety of networks standards which can be interlinked to solve complex data communication strategy.

Product Range Overview

These modules include:

- Power Supplies
- CPUs
- I/O modules (analogue and digital)
- Gateways
- Network Interface Modules (NIMs)
- Programming Tools. & Accessories

A range of accessories to assist in system integration, testing and commissioning. A powerful network communications infrastructure provides the end user with the most flexible plant seamless data communications system available anywhere.

Applications

Applications include Data Acquisition, Remote Control, Radiological Surveillance Systems Monitoring, Energy Management, Telemetry, 3rd party device interfacing, Pump control, Electrical and MCC interfacing, Alarm Annunciation including sub 1milli second Time Stamping, Machine Monitoring and security systems for utilities, mining, minerals, manufacturing, food & beverage, chemical and petrochemical industries.

While Maxiflex has been designed for the end user to engineer his own solutions using standard modules, Omniflex also has System Integrators in mind where complete systems can be engineered to customer requirements. This includes engineering, cabinetry, wiring, installation and commissioning. Maxiflex is designed as a general-purpose product range to provide system integrators and end users with a powerful, flexible tool to engineer solutions across a wide range of industries using a standard hardware platform which is cost-effective, compact and robust.

In addition to custom solutions using off-the-shelf modules and bases, Omniflex' s product range also uses standard Maxiflex components to provide integrated solutions specific to certain industries. Radiological Surveillance for Nuclear

Remote Communications (See section on CPUs for more information)

Maxiflex has a powerful integrated local area networking capability using Ethernet, Conet, Conet/e, Conet/m Conet/s. It also has a number for Programmable Serial ports (RS232 or RS485) which can be used for 3rd party device interfacing. E.g. Modbus. Each CPU has a built-in RS232/485 port configurable as Modbus or Conet/s and local area network Ethernet port. Plug-in RS232/485, Ethernet ports are also available (NIMS). This powerful plant data communications infrastructure from plant floor to supervisory level gives the user a flexible integrated system solution across a wide range of industries and applications. Conet NIMs facilitate Network T offs or even Star and Ring configuration using existing instrument cabling.

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Figure 1: Typical Maxiflex Base with full set of modules

System Bus

The Maxiflex bus provides all the necessary power rails and address and data bus for I/O.

System Size

The Maxiflex 1000 Series RTU can accommodate up to 15 modules per CPU (7 I/O Master Base plus 8 I/O Expander Base). Using 16 channel modules, this gives 240 I/O (mixed analogues and/or digitals). With 32 channel modules the I/O count will double to 480 or 960 with 64 Channel Modules.

Each system requires 1 CPU which interfaces to all 15 mod ules in the two bases, storing data from these modules in memory for access by the relevant network. Any combination of I/O modules, NIMs and Hubs can be used in any of the I/O slots. The CPU recognizes these intelligently and addresses them accordingly.

Remote I/O architectures can expand I/O to 4000 from a single CPU controller facilitating large I/O applications perfect for supervisory systems that poll for data.

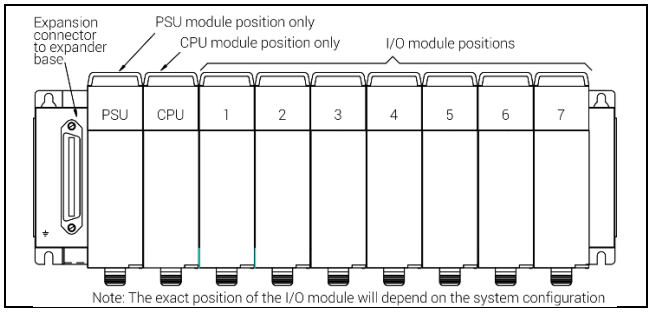


Figure 2: Typical Maxiflex master base layout

Module Mechanics

Maxiflex modules are manufactured from a blend of ABS and polycarbonate which is durable, UV stabilized, flame retardant and very tough. A single screw holds the entire module together to facilitate ease of assembly and disassembly for manufacture and servicing. The front door opens to reveal the removable screw terminals for field wiring on general I/O modules while others e.g. CPU, use connectors which are accessible through the module's door.
Each module has a set of status and/or diagnostic LEDs which are visible through a translucent LED cover. All modules use the same housing, including PSUs.

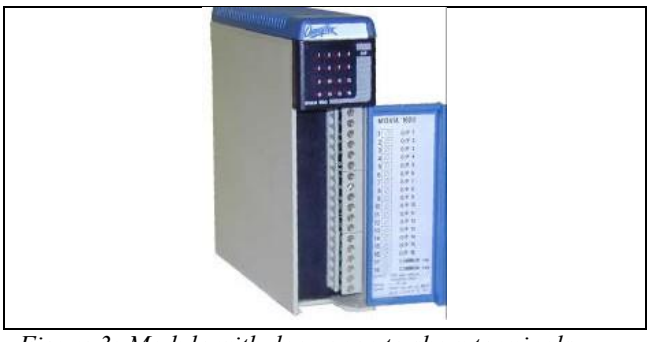


Figure 3: Module with door open to show terminals

Wiring

-All I/O module terminations are made via two-part screw clamp terminals behind the door on the front of the mod ule, thus eliminating the need for field termination boards. The wiring is routed through an open slot at the bottom of the module for neatness with the closed door presenting a neat and tidy finish for the RTU. A label on the inside of each door identifies the terminal connections and any other important user information (e.g. relay contact ratings). (See figure 4)

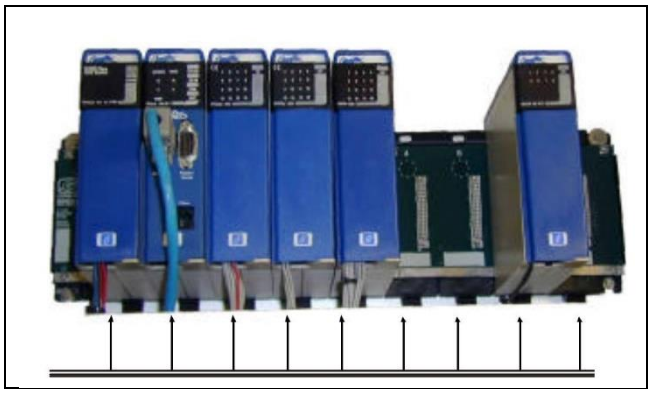


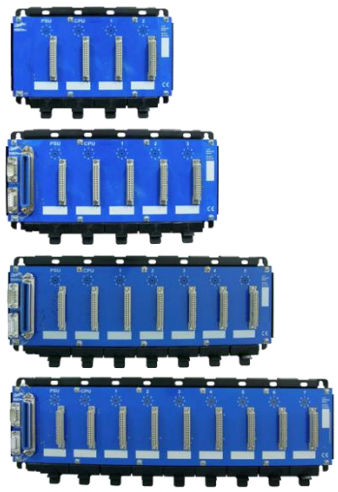
Figure 4: Front view of rack showing wiring routing

The two-part terminals enable modules to be removed without disturbing the field wiring, an important feature both for field servicing and maintenance of current loops in the plant. (See figure 3) All I/O modules are designed for hot plug in and will not cause spurious triggering on others in the system during insertion or removal.

Maxiflex should be installed in enclosures that prevent dust and moisture ingress. Figure 8 detail. The modules have ventilation slots for heat dissipation, so care must be taken to avoid metal filings, wire ends, or conductive dust. Instrumentation cabinets are ideal for installation. Refer to specifications for environmental data.

System Components

Bases



The Maxiflex bases are available in various sizes for application flexibility and to cater for enclosure limitations. The 3 I/O, 5 I/O and 7 I/O Master Bases are designed to expand to the 5 I/O and 8 I/O Ex pander Bases respectively, via the M1811A extension cable. The modules are locked in position onto the base via a plastic retaining clip which can be depressed for module re lease. The bases are designed for surface mounting, but a special adaptor bracket (M1821A) facilitates mounting in a 19" frame.

The I/O modules in the Expander Base are always under control of the CPU in the Master Base and there is no CPU facility in the Expander. Either expander may be used with either master base or the length of the Expander cable is limited to 400mm, allowing a maximum space of 120mm between bases. At least 100mm must be allowed between bases to leave space for the wiring from the Master Base and for mod ule insertion in the Expander Base. Note that an extra PSU is always required for the 8 I/O Expander Base, even if only one module is plugged in.

For more specifications, refer to each module's Datasheet.

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MODEL NO	DESCRIPTION	BASIC SPECIFICATION
M1001A	2 I/O Master Base.	Not Expandable 4 Modules wide (1PSU, 1CPU, 2I/O Slots).
M1021B	3 I/O Master Base.	Expandable to slave base 5 Modules wide (1PSU, 1CPU, 3I/O Slots).
M1023B	5 I/O Master Base.	Expander Base is connected to a Master Base using the M1811A Expander Cable. This allows a maximum of 15 I/O modules to be connected to a single CPU module. (1PSU, 1CPU, 5 I/O slots).
M1022B	7 I/O Master Base.	Expandable to slave base 9 Mod ules wide (1PSU, 1CPU, 7I/O Slots).
M1031B	5 I/O Expander Base.	Extra PSU re quired* 5 Modules wide (5I/O Slots)
M1032B	8 I/O Expander Base.	Extra PSU required* 9 Modules wide (1PSU, 8I/O Slots)

** A power supply is required on the expander base to power the I/O modules fitted to the expander base.*

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Model	Description	PSU Slot	CPU Slot	I/O Slots	Expand
M1001A	2 I/O Master Base	1	1	2	No
M1021B	3 I/O Master Base	1	1	3	Yes
M1023B	5 I/O Master Base	1	1	5	Yes
M1022B	7 I/O Master Base	1	1	7	Yes
M1031B	5 I/O Expander Base	None	None	5	-
M1032B	8 I/O Expander Base	1	None	8	-
M1811A	Expander Cable	N/A	N/A	N/A	N/A
M1821A	19" Adaptor Plate	N/A	N/A	N/A	N/A

Power Supplies (PSUs)



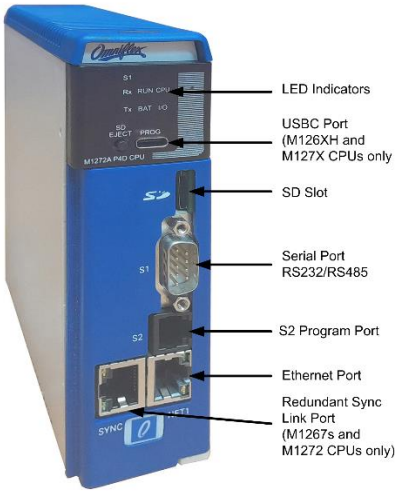
M1102B

MODEL NO	DESCRIPTION	BASIC SPECIFICATION
M1102B	Maxiflex 24Vdc Logic PSU.	DC Input Power Power Source 20-36Vdc 50Watts max. Protection 5A Fuse (Slow Blow) Logic Supply Outputs +5V Logic Supply 5.1V ±2% 5A maximum +12V Logic Supply 12V ±15% 2A maximum
M1104C	Maxiflex 48Vdc Logic/Field PSU.	DC Input Power Power Source 43-55Vdc 50Watts max. Protection 2A Fuse (Slow Blow) Efficiency >80% at Full Load Logic Supply Outputs +5V Logic Supply 5.1V ±2% 3A maximum +12V Logic Supply 12V ±15% 1A maximum
M1151C	Maxiflex AC Logic/ Field Power Supply. 110/220Vac/dc input supply.	AC Input Power Voltage 85-264Vac (100-240Vac nominal) or 93-250Vdc Frequency dc/50/60Hz DC Outputs +5V Logic Supply 5.1V ±2% 4.4A max (see Total Logic Power) +12V Logic Supply 12V ±15% 1A max (see Total Logic Power)

A range of plug-in modular power supplies is available for Solar, DC and AC applications.
PSUs supply the base with +12Vdc and +5Vdc logic (L) rails. Some PSUs cater for different requirements such as battery charging (C), isolated field power supply (F) and solar power input (S). Note that in battery charging applications, the batteries are always a separate item in the system and are not built into the PSU.
PSUs with built-in battery chargers are supplied with a temperature sensor (thermistor) which must be mounted near the battery terminals to sense the ambient temperature. The charging current is then adjusted automatically to prevent over-charging in hot conditions, thus prolonging the life of the battery.

For more specifications, refer to each module's Datasheet.

Central Processing Units (CPUs)



M1272A

Note: *All CPUs come with a Serial Port CPUs control both master and expander bases, with built-in RS232/485 Communication options include Conet, Ethernet, 4G & 5G using the GSM network and Wireless Radios. All feature a program port for downloading programs and a battery-backed real-time clock with non-volatile RAM. The CPUs are programmable in the standard IEC61131 programming capabilities and support I/O scanning at 2 MHz with unique module IDs for diagnostics.*
The T2 series CPUs simplify telemetry and data acquisition with automatic I/O scanning and DIT table configuration. The M126X CPUs support IEC61131 programming, with Conet and Ethernet communications while the M127x CPUs also include GSM 4G/5G and Radio Telemetry communication. All CPUs are configured via the OmniSet (free to download) utility, designed for ease of use and quick system implementation.
Only a few P3 CPUs are available as the controller is no longer available so there are a range of P3H CPUs that are direct plug-in replacement for its counterpart in P3. For example, M1267H is a plug-in replacement for M1267. A new range of P4 CPUs are available for installation in new systems.

For more specifications, refer to each module's Datasheet.

MODEL NO	DESCRIPTION	BASIC SPECIFICATION
M1241B	Maxiflex T2 CPU	Maxiflex CPU T2 Serial Port, Conet/c Port.
M1249A	Maxiflex Remote I/O Scanner	Maxiflex R3c Remote I/O Scanner
M1261F	Maxiflex P3c CPU.	Maxiflex CPU P3c Conet/c port
M1262G	Maxiflex P3e CPU.	Maxiflex CPU P3e Ethernet Port
M1264A	Maxiflex A3c Maxilarm CPU	Maxiflex CPU A3c Maxilarm Conet/c port.
M1267C	Maxiflex P3e-R CPU.	Maxiflex CPU P3e-R Redundant Controller.
M1261H	Maxiflex CPU P3Hc Conet/c port	Maxiflex CPU P3c Conet/c port Supersedes M1261F
M1262H	Maxiflex CPU P3He Ethernet Port	Maxiflex CPU P3He Ethernet Port Supersedes M1262 and M1260
M1264H	Maxiflex CPU A3Hc Maxilarm Conet/c port	Maxiflex CPU A3Hc Maxilarm Conet/c port. Supersedes M1264A
M1265H	Maxiflex CPU A3He Maxilarm Serial, Ethernet Port, Graphic Programming	Maxiflex CPU A3He Maxilarm Ethernet Port Supersedes M1265A
M1267H	Maxiflex CPU P3He-R Redundant Controller	Maxiflex CPU P3He-R Redundant Controller Supersedes M1267C
M1271A	Maxiflex P4 CPU	Maxiflex P4 CPU Serial Port, Ethernet port
M1271A-141	Maxiflex P4G4 CPU with 4G/LTE (Region EU/ZA)	Maxiflex P4 CPU Serial Port, Ethernet and 4G GSM connectivity in Europe and South Africa
M1271A-142	Maxiflex P4G4 CPU with 4G/LTE (Region AUS)	Maxiflex P4 CPU Serial Port, Ethernet and 4G GSM connectivity in Australia
M1271A-143	Maxiflex P4G4 CPU with 4G/LTE (Region USA – AT&T, T-Mob etc.)	Maxiflex P4 CPU Serial Port, , Ethernet and 4G GSM connectivity in USA – AT&T, T-Mob etc.)
M1271A-144	Maxiflex P4G4 CPU with 4G/LTE (Region USA - Verizon)	Maxiflex P4 CPU Serial Port, Ethernet and 4G GSM connectivity in USA – Verizon
M1271A-201	Maxiflex P4C1 CPU with Conet/c	Maxiflex P4 CPU Serial Port, Ethernet and Conet/c connectivity
M1271A-301	Maxiflex P4R1 CPU with 2.4GHz Short Range Wireless	Maxiflex P4 CPU Serial Port, Ethernet 2,4GHx 63mW radio Global use– short range
M1271A-302	Maxiflex P4R2 CPU with 868MHz Short Range Wireless	Maxiflex P4 CPU Serial Port, Ethernet 868MHz 10mW licence-free radio network port (Europe (CE) and South Africa only) – short range
M1271A-305	Maxiflex P4R5 CPU with 915MHz Long Range Wireless	Maxiflex P4 CPU Serial Port, Ethernet 915MHz 1W licence-free radio network port (USA and Australia only) – long range
M1271A-306	Maxiflex P4R6 CPU with 868MHz Long Range Wireless	Maxiflex P4 CPU Serial Port, Ethernet 868MHz 500mW licence-free radio network port (Europe (CE) and South Africa only) – long range
M1271A-307	Maxiflex P4R7 CPU with 464MHz Long Range Wireless	Maxiflex P4 CPU Serial Port, Ethernet 464MHz 500mW licence-free radio network port (UK, Ireland and South Africa only) – long range
M1271A-308	Maxiflex P4R8 CPU with 433MHz Long Range Wireless	Maxiflex P4 CPU Serial Port, Ethernet 433MHz 500mW licence-free radio network port (UK, Ireland and South Africa only) – long range
M1271A-309	Maxiflex P4R9 CPU with 169MHz Long Range Wireless	Maxiflex P4 CPU Serial Port, Ethernet 169MHz 500mW licence-free radio network port (UK, Ireland and South Africa only) – long range
M1272A	Maxiflex P4D Dual Redundant Programmable Logic Controller CPU	Maxiflex P4D CPU Serial Port, Ethernet Port and Sync Link Port. For dual redundant remote I/O and control applications, high availability hot standby
M1275A	Maxiflex A4e Maxilarm CPU	Maxiflex A4e Serial Port, Conet port Maxilarm functionality using the Maxiflex architecture.

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Digital Input Modules (DI)



M1322A

Digital Input Modules are used to monitor binary field conditions such as switches or relay contacts and are scanned every few milliseconds by the CPU. The modules can be used for a variety of applications, including alarm annunciation and sequence of events recording. In the latter case, the CPU timestamps and makes data available to the network via a queue. Input status indication is always indicated by individual green LEDs mounted behind the LED cover. An input present (con tact closed) will turn the respective LED on.

For more specifications, refer to each module's Datasheet.

MODEL NO	SHORT NAME	BASIC SPECIFICATION
M1321A MX 8DI C	MX 8DI C	8 Contact inputs. (Potential free) Isolation : 1500 Vrms Input to Logic : 1500 Vrms between Inputs Wetting Potential : <4.5 V load dependent Sense Current : <0.5 mA load dependant Closed Resistance : <2 k Open Resistance : >20 k Input Voltage : 4.5 Vdc min.to 200 Vdc max. Input Response : 15 ms to register change
M1322A M1323A	MX 16DI-24 MX 16DI-48	16 Contact inputs (Potential free or wetted): (Single Common input) Wetted Inputs : 9 to 30 Vdc Inputs Isolation (Opto) : 1500 Vrms Input to Logic Off Voltage : <4,5 V Off Current : <0,3 mA On Voltage(16DI-24) : 9 to 30 V On Voltage(16DI-48) : 40 to 60 V On Current : 1,5 to 8 mA Input Response : 15 ms to register change
M1326B	MX 32DI	32 Contact inputs via 2 Ribbon Headers (Potential free or wetted) External Supply Volts : 18 to 28 Vdc Inputs Current Consumption : 25mA Max. Excl loads Maximum rated current : 200mA all Inputs on Maximum Voltage for logic 1 : 2 V Maximum Voltage for logic 0 : 8V In put Current : 8.5 mA at 28Vdc supply In put Response : 15 ms to register change
M1327A	MX 64DI	64 Contact inputs via 4 Ribbon Headers (Potential free or wetted) External Supply Volts : 18 to 28 Vdc Inputs Current Consumption : 25mA Max. Excl loads Maximum rated current : 200mA all Inputs on Maximum Voltage for logic 1 : 2 V Maximum Voltage for logic 0 : 8V In put Current : 8.5 mA at 28Vdc supply In put Response : 15 ms to register change
M1330A	MX 8DI8RO	8 Contact Inputs 8 Relay Output N.O. Wetted Inputs : 9 to 30 Vdc Inputs Relay Outputs : 250Vac 2A

M1321A 8 DI-C (8 Contact Inputs, fully isolated).
The 8DI-C provides full inter-input isolation and logic isolation. Field isolation is provided by individual transformers on each input which supply a 5V 8mA potential for wetting contacts in the field. The module can also monitor series contacts in a DC chain, with up to 200 Vdc across each contact, as would be found in a dc motor control circuit.

M1322A 16 DI-24 (16 Digital Input 10-30 Vdc)
This module accepts 16 x 10 - 30 Vdc inputs directly in two groups of 8 each with a separate common. The inputs are isolated from the logic via optocouplers (1500 Vac rms) and no inter-input isolation. Typical input response time is 15ms.

M1323A 16 DI-48 (16 Digital Inputs 40-60 Vdc)
As above for M1322A except 40 to 60 Vdc inputs.

M1326B 32DI (32 Digital Input 18-30 Vdc))
The 32 DI provides 32 Digital Inputs (18-30Vdc) via two 20 Way ribbon headers and share a common terminal per 16 Outputs. Ribbon cables connect the inputs from a DIN rail mounting 16-way terminal board (C6321) which provides better marshalling of field Inputs. Input status is represented by 32 RED LEDs on the Fascia

M1327A 64DI (64 Digital Input 18-30 Vdc)
The 64 DI provides 64 Digital Inputs (18-30Vdc) via four 20 Way ribbon headers and share a common terminal per 16 Outputs. Ribbon cables connect the inputs from a DIN rail mounting 16-way terminal board (C6321) which provides better marshalling of field Inputs. Input status is represented by 64 RED LEDs on the Fascia

M1330A 8DI8RO (8 Digital In 8 Relay Out N/O.)
Combination Module with Inputs and Outputs on the same module, 8 Inputs with a single common and 8 N/O. Relay contacts 2Amp max
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Digital Output Modules (DO)



M1341B

Digital Output Modules are generally used for switching and control purposes such as switching solenoids or open and close valves and are scanned every few milliseconds by the CPU. Output status indication is always indicated by individual RED LEDs mounted behind the LED cover except on 32 channel modules where the terminal board has indication. An output turned on (or relay energised) will result in the respective LED being turned on.

For more specifications, refer to each module's Datasheet.

MODEL NO	SHORT NAME	BASIC SPECIFICATION
M1341B	MX 16 DO	16 Channel Potential Free transistor output Type : NPN Transistor Connection Type : Terminal and Ribbon Voltage : 5-90 Vdc Current Sink* : 100 mA max @ 25 °C. *Derate current at: 0,75 mA/°C up to 70 °C Vce (On) : 1.1 VDC max. @ 100mA Isolation : 1500 Vrms Logic to Output Protection : Fly wheel diode for each output
M1342A	MX 32 DO	32 Channel Potential Free transistor output Type : NPN Transistor Connection Type : Ribbon Voltage : 18-30 VDC Current Sink* : 80 mA max @ 25 °C. *Derate current @ : 0,75 mA/°C up to 70 °C Vcc (On) : 1 VDC max. @ 80mA Isolation : 1500 Vrms Logic to Out put Protection : Fly wheel diode for each +24V Supply
M1372A	MX 8 RO	8 Channel Relay Output Contacts : Normally open (Form A) Rating (max.) : 1250 VA or 150 W Resistive : 500 VA or 60 W Inductive Current : 5 A max Min Load : 5 V @ 10mA Operate Time : 10 ms maximum Release Time : 10 ms maximum Operating Frequency : 18000 operations/hr (Mechanical) : 1800 operations/hr (Electrical)

M1341B 16 DO (16 Digital Outputs)
The 16 DO provides 16 NPN transistor outputs capable of driving 100 mA each. These would typically be used for switching external relays, mimic lamps/LEDs or as inputs to other systems (e.g. PLCs). The outputs share a common terminal. Output status is represented by 16 RED LEDs.

M1342A 32DO (32 Channel Open Collector Transistor output)
The 32 DO provides 32 NPN transistor outputs capable of driving 80mA each. The outputs are on two twenty-way ribbon headers and share a common terminal per sixteen outputs. Ribbon cables connect the outputs to a DIN rail mounting 16 way terminal board (C6321). Output status is rep represented by 16 RED LEDs on the terminal board C6321.

M1372A 8 RO (8 N/O Relay Outputs)
The 8 RO plugs into any of the available I/O slots and provides eight normally open (form-A) contacts for general purpose control applications. Each of the outputs is fully isolated from the other and individual common and N/O contacts are brought out to the terminals. Any or all of the relays may be energised at any one time, this being done under control of the application program in the CPU.

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Analog Input Modules (AI)



M1403A

Analog Input Modules are used to monitor analogue signals from the field such as temperature, level or speed and are scanned every few milliseconds by the CPU. The modules can be used for a variety of applications, including alarm annunciation and sequence of events recording. In the latter case, the CPU timestamps and makes data available to the network via a queue.

For more specifications, refer to each module's Datasheet.

MODEL NO	SHORT NAME	BASIC SPECIFICATION
M1403A	MX 16AI	16 Channel Analog inputs. Inputs : 0-20 mA*, 4-20 mA*, 0-5 V, : 1-5 V, 0-10 V, 2-10 V, 0-1 V, 0,2-1 V * Current Inputs can have the 50 0.1% conditioning resistor fitted either internally or externally Inputs have a shared common Inputs ranges are DIP switch selectable Accuracy : 0,25% of FSR maximum Linearity : 0,1% of FSR typical. Resolution : 12 bits Response Time : 320 ms maximum 10-90% step Drift : 100 ppm/°C typical Isolation : 2500 Vrms Input to Logic
M1431B	8VC iso	8 individually Isolated Voltage/Current Inputs Accuracy : 0,04% Span Linearity : 0,04% of FSR typical. Resolution : 12 bits Response Time : 200 ms maximum 10-90% step within 3% Drift : 100 ppm/°C typical Isolation : 1500 Vrms Input to Logic isolation : 500 Vrms between Inputs
M1432C	8 TC/mV	8 individually Isolated TC/mV Inputs Accuracy : 0,17% @ 1V Range : 0,017% @ 10V Range Linearity : Software breakpoint linear interpolation Resolution : 0,1°C or °F Response Time : 200 ms maximum 10-90% step within 3% Drift : 100 ppm/°C typical Isolation : 1500 Vrms Input to Logic isolation : 500 Vrms between Inputs
M1433B	6 RTD	6 individually Isolated RTD Inputs (3 Wire Pt or Ni) Accuracy : 0,5°C Typical, 1°C Max Linearity : Software breakpoint linear interpolation Resolution : 0,1°C or °F Response Time : 200 ms maximum 10-90% step within 3% Drift : 100 ppm/°C typical Isolation : 1500 Vrms Input to Logic isolation : 500 Vrms between Inputs
M1434E	8 AI Iso	8 Analogue Inputs High Precision 24Bit Accuracy : 0.01% of span Linearity : 0.01% of span max. Resolution : 1µV Response Time : 200 ms maximum 10-90% step within 3% Drift : 50 ppm/°C typical Isolation : 500 Vrms to each Hart Loop : 500 Vrms between Inputs
M1436A	4 RTD	4 individually isolated RTD inputs (4 Wire) Pt 100 Accuracy : 0,1°C Typical, Linearity : Software breakpoint linear interpolation Resolution : 0,1°C or °F Response Time : 200 ms maximum 10-90% step within 3% Drift : 30 ppm/°C typical Isolation : 1500 Vrms Input to Logic isolation : 500 Vrms between Inputs
M1438A	8H Hart Input	8 individually Isolated Hart Inputs No of Hart Devices: 8 Iso Loops Analogue Mode : 15 per Channel Digital Mode (120 devices) Baud Rate : 300 to 38400. Hart Mode : Primary Master Loop Voltage : 30V maximum Loop Resistance : 230 Ohms Isolation : 1500 Vrms Input to Logic isolation : 500 Vrms between Inputs

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M1403A 16 AI (16 Analog Inputs)
The M1403A can be used for any general-purpose analogue signal monitoring applications, providing an extremely cost-effective solution due to signal density. The sixteen inputs share a common (two terminals) but are isolated from the bus by 2500 Vrms. The module provides 12-bit accuracy (0,25%) on each input. The inputs are DIP switch selectable from the front.

M1431B 8VC Isolated Inputs
The M1431A provides Eight Independently isolated inputs for Voltage and Current inputs. Scalable through DIT tables. Each input has four soft setpoints with deadband.

M1432C 8TC/mV Isolated Inputs
The M1432 provides 8 Independently isolated Inputs for thermocouple or millivoltage inputs. Scaled directly to temperature in DIT tables. Each input has four soft setpoints with deadband. Inputs may have mixed types of thermocouples.

M1433B 6RTD Isolated Inputs 3 wire
The M1433B provides 6 Independently isolated Inputs for RTD inputs such as Pt100, Pt1000 etc. Scaled directly to temperature in DIT tables. Each input has four soft setpoints with deadband. Inputs may have mixed types of RTDs

M1434E 8AI Isolated Inputs 24 bit
The M1434 8AI ISO 8 channel analogue input module provides 8 fully isolated voltage (1-5V) inputs with high precision 24 Bit for high accuracy applications

M1436A 4RTD Isolated Inputs 4 wire
The M1436A 4RTD module provides 4 resistance temperature detector inputs with 32-bit precision for 4 Wire RTD input module. Supports Pt100 STD. Range -115 to 327C. to 0.01degrees C

M1438A 8 Hart I/P
The M1438A provides 8 Independent Hart Channels in either analogue role or digital role as a NIM for Interface to HART enabled devices to send and retrieve data. In digital Mode up to 120 Hart devices may be connected 8ch each with 15 devices

Analog Output Module (AO)



M1412A

Analog Output modules are crucial industrial components that convert digital data into continuous, varying analogue signals (like 4-20mA or 0-10V) to control devices needing proportional adjustments, such as motor Variable Frequency Drives (VFDs) or proportional valves, allowing precise control beyond simple ON/OFF states for smooth operation in automation.

MODEL NO	SHORT NAME	BASIC SPECIFICATION
M1412A	8AO	8 Channel 4-20 mA output (0V Common) Load : 1kΩ maximum at 26,4Vdc External Supply : 24Vdc ± 10% : 230mA all outputs at 20mA. Accuracy : 0,25% of FSR maximum Linearity : 0,1% of FSR typical Resolution : 12 bits Drift : 100ppm/°C typical Response Time : 80ms 10 to 90% step Isolation : 1500 Vrms Logic to Out put

For more specifications, refer to each module's Datasheet.

M1412A 8AO 8 Analog Out (4-20mA) 0V Common
The 8AO ISO provides 8 isolated 4-20 mA (0-20 mA) current loop outputs which can be used in any general-purpose analogue applications. Each output circuit is isolated from the bus by 1500 Vac rms.
The analogue output module is microprocessor controlled and thus requires no individual zero and span calibration for each channel. It also provides a diagnostic RUN LED which tells the user when the module is healthy. The module uses a 12-bit D/A convertor which provides 0,25 % accuracy.

Network Interface Modules (NIMs)



M1586A

This is a special class of module that can be installed into any I/O Slot of a Maxiflex base to extend the networking functionality of the CPU. These modules are called Network Interface Modules or NIM's. Different NIMs are required for different types of networks.
NIMs are used to provide an interface between the main CPU and another network, which may be Conet, Ethernet, Conet/m or RS232/485. The NIM communicates on the backplane via the data bus and appears to the CPU as another network port on the CPU. NIMS provide a very powerful communications infrastructure for Maxiflex and al low multiple networks, network routeing and third-party device interfacing on all networks. NIMS incorporate their own CPU, RAM, ROM and EEPROM, thus unloading the main CPU from their task.
By using a combination of NIMs, data can be routed from one to the other (under control of the main CPU) thus effectively providing gateways between one network type and another (e.g. Conet to Conet/m or Ethernet).

For more specifications, refer to each module's Datasheet.

MODEL NO	DESCRIPTION	BASIC SPECIFICATION
M1580A	Dual Serial NIM	Dual Modbus Master/Slave/ Conet/s FORTH Prog
M1584B	ABB Vista NIM	The ABB Vista NIM that receives a serial data string from the printer output port of a Vista Gas Chromatograph FORTH Prog
M1586A	Conet LAN NIM	Conet NIM with a: Conet industrial LAN port with Isolation of 1500 Vac rms FORTH Prog
M1588D	Mirion NIM	Serial Interface to Mirion RSS radiological detectors
M1589D	Dual HART NIM	Dual HART Network Interface Module,: Secondary master 30 devices
M1591B	Ethernet NIM	Modbus TCP Ethernet Network Interface Module FORTH Prog
M1592B variant	ULTRA NIM	Serial Interface to ULTRA RSS radiological detectors ex Lab Impex FORTH Prog
M1592B	Serial NIM	Serial Modbus Master/Slave/Conet/s FORTH Prog
M1595BA	Ethernet NIM	Modbus TCP / Conet/e Ethernet Network Interface Module. Also used as Remote I/O link adapter with Mx CPUs expansion to 4000I/O ISaGraf IEC61131 Prog

M1580A Dual Serial Nim
Maxiflex Dual Modbus NIM. 2 Independent RS232/485 ports isolated. Supports Modbus Master, Modbus Slave and Conet/s. Programmable for other custom protocols.

M1584B ABB Vista GC
ABB VISTA Analyser NIM. Single RS232/485 Port isolated. Implementation of VISTA Printer Protocol on Serial Port to receive a serial data string from the Gas Chromatograph

M1586A Conet LAN
Maxiflex Single Programmable Conet NIM. Single Conet Port isolated. Allows multiple full function Conet Networks to be connected to a single point and through Conet Routing expands Conet address limit to 65535 unique IDs.

M1588D Mirion Radiological Detectors. RSS Applications
Maxiflex NIM for interface to MIRION ex Canberra Harwell AB96, iCAM and G64 radiological monitors. A mixture of up to 32 of these monitor types may be accommodated on a single RS485 multidrop network.

M1589D Hart NIM
Maxiflex Dual Hart NIM for Interface to HART enabled devices to send and retrieve data for up to 30 Hart Devices as Primary Master in each Loop

M1591B
Maxiflex Single Programmable ETHERNET NIM. Single UTP Port; single TCP/IP connection. Modbus Serial over Ethernet or Modbus/TCP Slave Protocol support. Programmable in Forth only.

M1592B Variant
Maxiflex Serial NIM for ULTRA radiological monitors for RSS systems \Ex Lab Impex

M1592B
Maxiflex NIM with one isolated RS232/485 Serial Port. Supports Conet/s, Modbus (Master/Slave; ASCII/RTU), or custom protocol FORTH Prog

M1595A
Maxiflex Standard Ethernet NIM provides an additional Ethernet Network Connection to Maxiflex system. It also acts as a Remote I/O Scanner and allows connection up to 7 Maxiflex remote I/O Bases via Ethernet (4000 I/O), ISaGRAF IEC61131 Programming.

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Remote I/O Scanner Modules (RIO)



M1593A

For more specifications, refer to each module's Datasheet.

Remote I/O modules are used to expand the Maxiflex system using either Conet or Ethernet networking.

MODEL NO	SHORT NAME	BASIC SPECIFICATION
M1593A	RIOc	Remote I/O Link CONET
M1594A	RIOe	Redundant I/O link Ethernet
M1595A	ETHERNET NIM	Remote I/O Link Adapter

M1593AA REMOTE I/O LINK MODULE CONET

The M1593A Remote I/O Conet Link (RIOc) Module allows up to three Maxiflex remote I/O Bases up to 1000 I/O to be connected to a Maxiflex Master Base using CONET. The Remote I/O Bases ar in the same panel, or up to 10km away.
The RIOc module fits into any I/O slot of a Maxiflex Master Base and connects to up to 3 Maxiflex Remote I/O Base Units using CONET. Each Remote I/O Processor can scan up to 15 I/O modules.

M1594A REDUNDANT I/O LINK ETHERNET

The M1594A Redundant I/O Ethernet Link (RIOe) Module is designed specifically for redundant I/O and control applications, where high availability system is required by combining two additional identical specialised CPUs, each with their own Power Supply and Base and the M1594A to create independent Primary and Secondary Master Controllers. Expand I/O on Maxiflex Systems to 4000 I/O using up to 7 Remote I/O Maxiflex base units.

M1595A

Maxiflex Standard Ethernet NIM provides an additional Ethernet Network Connection to Maxiflex system. It also acts as a Remote I/O Scanner and allows connection up to 7 Maxiflex remote I/O Bases via Ethernet (4000 I/O), ISaGRAF IEC61131 Programming.

Special Function Modules



M1711A

These include special modules including a Dummy module, High Speed Counters, Metrology Pulse Integrity and Meter Prover Modules, and Sequence of Event Recorder modules.

For more specifications, refer to each module's Datasheet.

MODEL NO	SHORT NAME	BASIC SPECIFICATION
M1701A	DM	Mx Dummy Module
M1711A	4 HSC	Mx Four Channel High Speed Counter – up to 50kHz
M1712A	8 HSC	Mx Eight Channel 2 High Speed Counters; up to 50 and 100kHz
M1713B	4 PI	MX 4PI 4 Ch Flow Metering Pulse Integrity Module
M1714B	MP	Mx Meter Prover Module is used in meter proving systems
M1715A	2PFC	2 Channel Isolated Frequency Counter Module
M1760A	SOE 9-30Vdc	Mx 32SOE Inputs,9-30Vdc
M1761A	SOE 30-60Vdc	Mx 32SOE Inputs,30-60Vdc

M1701A DUMMY MODULE

The Dummy Module is used to fill blank spaces on bases for aesthetics and longer-term protection of the bases spare slot positions.

M1711 & M1712A HIGH SPEED COUNTERS

The counter modules come in two forms. The first is a four-channel high speed counter for inputs up to 50kHz. The second is an eight-channel general purpose counter with the first seven channels counting up to1kHz and the eighth channel counting to 10kHz.

M1714B & M1713B METER PROVER, PULSE INTEGRITY MODULES

These Modules are used in meter proving systems (Metrology) for Petroleum Measurement. It uses (Pulse Interpolation) a method of "double chronometry" for increasing the resolution of flow metering pulses when proving meters.

M1715A 2PFC 2 CHANNE ISOLATED FREQUENCY COUNTER MODULE

The Maxiflex 2PFC Module is used to monitor dual inputs from flow meters and to detect and correct errors in the input pulse streams. The module is designed to achieve the functionality of Level A security requirements of specification ISO 6551

M1760A & M1761A SEQUENCE OF EVENTS SOE MODULES (Sub 1msec time stamping)

The M1760A 9-30Vdc and M1761A 30-60Vdc provide sub 1 millisecond time stamped change of state data for Sequence of Event recording in plant alarm and tripping systems to aid in root cause diagnostic maintenance.

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Miscellaneous

Accessories







MAXIFLEX EXTENSION CABLE

The M1811 Expander Cable is 400mm long, allowing a maximum of 120mm between the Master and Expander bases when mounted one above the other. A space of least 100mm must be allowed between bases when mounted to allow for module insertion/removal and field wiring. The Adaptor plate has this 100mm top clearance already built-in to allow for module removal. Due to the high-speed bus, it is important that only the original Omniflex cable must be used. Users must not extend the cable beyond 400 mm. *See Figure 10.*

MAXIFLEX 19" ADAPTOR PLATE

The Maxiflex 19" Adaptor Plate is used to mount the range of Maxiflex Bases into a 19" Cabinet; each plate suitable for one Base.
When mounting equipment on swing-frames, ensure enough clearance is left at the rear of the rack to include the bend radius of any cables which are mounted on the rear of the rack.
NB! Adaptor Plate must be connected to a good earth in conjunction with the base. Use the stud provided on the plate for this purpose.

CAN Bus Time Sync connector The C1468A Cable and C1469A Terminator are used to join the Time Sync Link between Maxiflex Bases which synchronises all SOE modules for better than 1 millisecond resolution

MODEL NO	SHORT NAME	BASIC SPECIFICATION
M1811A	Maxiflex Extension cable	Length : 500 mm For expansion to expander bases
M1821A	Maxiflex 19" Adaptor Plate	Plate Dimensions: Width 483mm Height 266.7 mm (6U) Depth 150mm For mounting a Maxiflex Base to a 19" Cabinet
C1469A C1468A	Maxiflex CAN Bus Time Sync Terminator and Cable	CAN Bus Interconnect Cable and Terminators DB9 connectors.

Programming the CPU



CC001B/CC032B



C1179A



M1841B



RJ12 connector

CC001B Omniset Configuration Software is used to configure the CPU which is free for download from the Omniflex website. This software used with the C1179A Omniflex RJ12 Programming cable connected to the CPU's RJ12 S2 port allows configuration of all Maxiflex CPUs.

All Maxiflex CPUs can also be custom programmed like a PLC. It is based on the IEC61131-3 standard which defines 5 programming languages: Sequential Flow Chart (SFC), Function Block Diagram (FBD), Ladder Diagram (LD), Structured Text (ST) and Instruction List (IL). It is programmed using C032B Omniset Pro 9 Configuration Software and ISaGRAF.

Two versions of ISaGRAF are available: CC030A V2 and CC030B V6; 32-bit and 64-bit respectively depending on the PCs Operating System.

ISaGRAF V6 can be used with the M1841B IEC61131 ISaGRAF Software Dongle which is used for writing custom applications and for configuring the CPU and connects to the RJ12 (S2) programming socket.

ISaGRAF V2 is used with the C1179A Omniflex RJ12 Programming cable for P3/A3/T2 CPUs and with the supplied USBC cable for P3H and P4/A4 CPUs.

Maxiflex T2 and P3/A3 CPUs only have a RJ12 programming port while P3H and P4/A4 CPUs have a RJ12 programming port and a USB Type C programming port.

Refer to Table below for a summary.

CPU	ISaGRAF PROGRAMMING			CONFIGURING CPU	
	Port & Device (V2)		Port & Device (V6)	Port & Device	Port & Device
T2	S2 & C1179A	N/A	S2 & M1841B	S2 & C1179A	N/A
P3	S2 & C1179A	N/A	S2 & M1841B	S2 & C1179A	N/A
A3	S2 & C1179A	N/A	S2 & M1841B	S2 & C1179A	N/A
P3H	S2 & C1179A[1]	Prog & USBC Cable[2]	S2 & C1179A	S2 & C1179A	Prog & USBC Cable
P4	S2 & C1179A[1]	Prog & USBC Cable[2]	S2 & C1179A	S2 & C1179A	Prog & USBC Cable
A4	S2 & C1179A[1]	Prog & USBC Cable[2]	S2 & C1179A	S2 & C1179A	Prog & USBC Cable

Note 1: You can also use ISaGRAF V2 using the S2 (RJ12) port but RJ12's protocol must be set to ISaGRAF using Omniset Pro.
2: USB C cable is supplied when ordering this CPU

Communications and Networking

Networking

Maxiflex has a powerful integrated local area networking capability which includes Ethernet, three fieldbus local area networks and programmable serial links (RS232 or RS485). Each CPU has a built-in serial port and Ethernet plus one optional network interface which is either Conet, or Conet/s or Conet/m. This choice of networks enables Maxiflex RTUs to be used in a wide range of applications and industries, catering for the widest variety of possible data flow strategies. Maxiflex CPUs feature Auto I/O scanning and immediately detect the module presence or absence and populate the presentation layer automatically obviating the need to write I/O scanning programs. . (See figure 5)

"CONET" is a total solution for industry, with comprehensive networking, I/O scanning and third-party Protocol Interfaces. These all work together to form an integrated solution for data acquisition, telemetry, energy management, radiological surveillance systems, alarm annunciation and many other applications. Conet network products all feature a presentation layer which enable a host (computer/DCS) on the network to access all devices in a standard format. In addition, formats for data type presentation are standardised so the user always expects data for digitals, analogues, BCD, HEX and decimal in formation in the same way, irrespective of the product or application. Powerful built-in Data Acquisition and Telemetry functions allow program less Data Acquisition and Telemetry applications to be configured with ease.

Conet is a token-passing, twisted pair network operating over 10 km at 62,5 kbaud with up to 127 nodes (See figure 6).. Conet/s allows Conet to function over ISM Band Radio, fibre-optic link, 4G/5G GSM Links. Conet/m is a radio network protocol supporting up to 255 nodes. Conet/e provides this full networking capability over Ethernet TCP/IP and Digital Radio Links

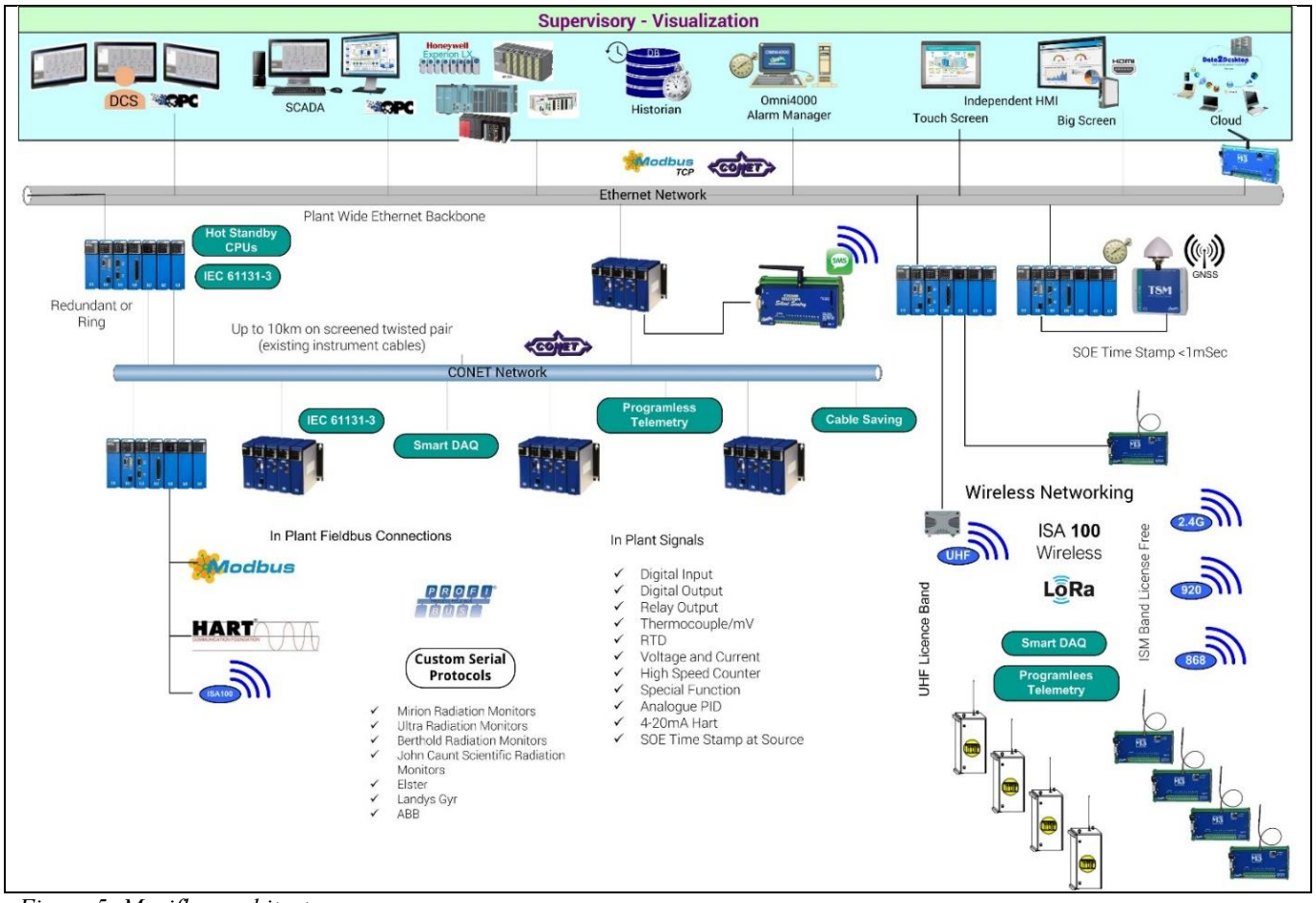


Figure 5: Maxiflex architecture

Conet Topologies



C6169

A C6169 Conet field termination board is used at each node to tee into the main Network cable line and provides a secure terminal for end of line resistors. Screw terminals are used on the line side for easy wiring and a removable terminal block on the node side allows it to be disconnected from the loop at any time without disrupting communications. Likewise, the node can be re-connected without powering down and Conet automatically detects that it has returned and resumes communications with it. The C6169 termination board provides surge suppression for high voltage noise protection, but this is subject to the use of the correct cable with screen for the application. Only earth the screen at one point on the network.

Conet networks can be configured for both bus, ring and star network topologies using this Conet Termination Board. and Maxiflex Routing Technology.

The Bus topology is the standard Topology for a Conet Network. Standard point to point or multidrop links (BUS) are accomplished with the usual connections to the front of the CPUs. See Figure 6.

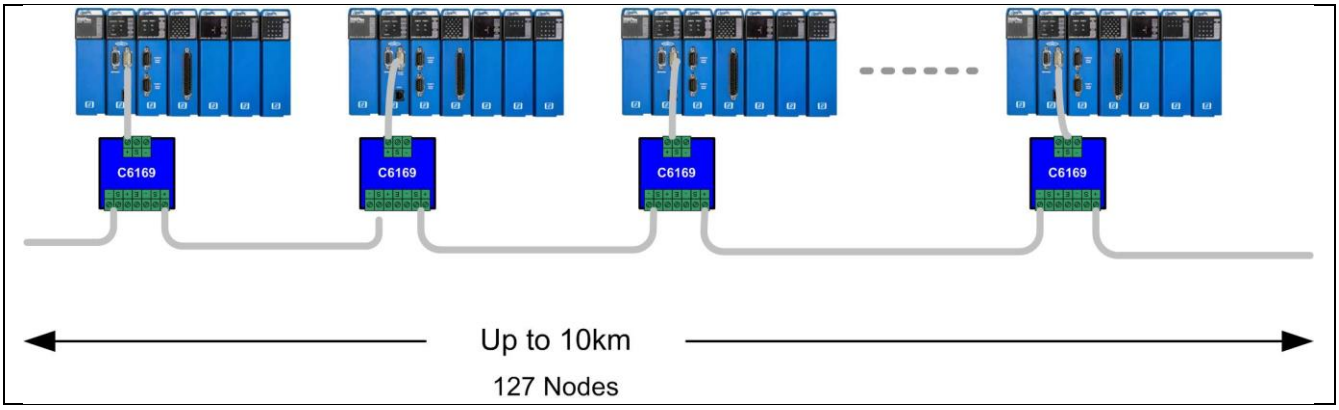


Figure 6: Conet Topology - Bus

However, Network Interface Modules (NIMs) are used for fanouts (STAR), to cater for geographically spread locations. Any number of NIMs can be linked in series on one network to extend the Conet Network and up to 15 NIMs may be connected in star fashion from one CPU, each NIM supporting a Conet Network. See Figure 7.

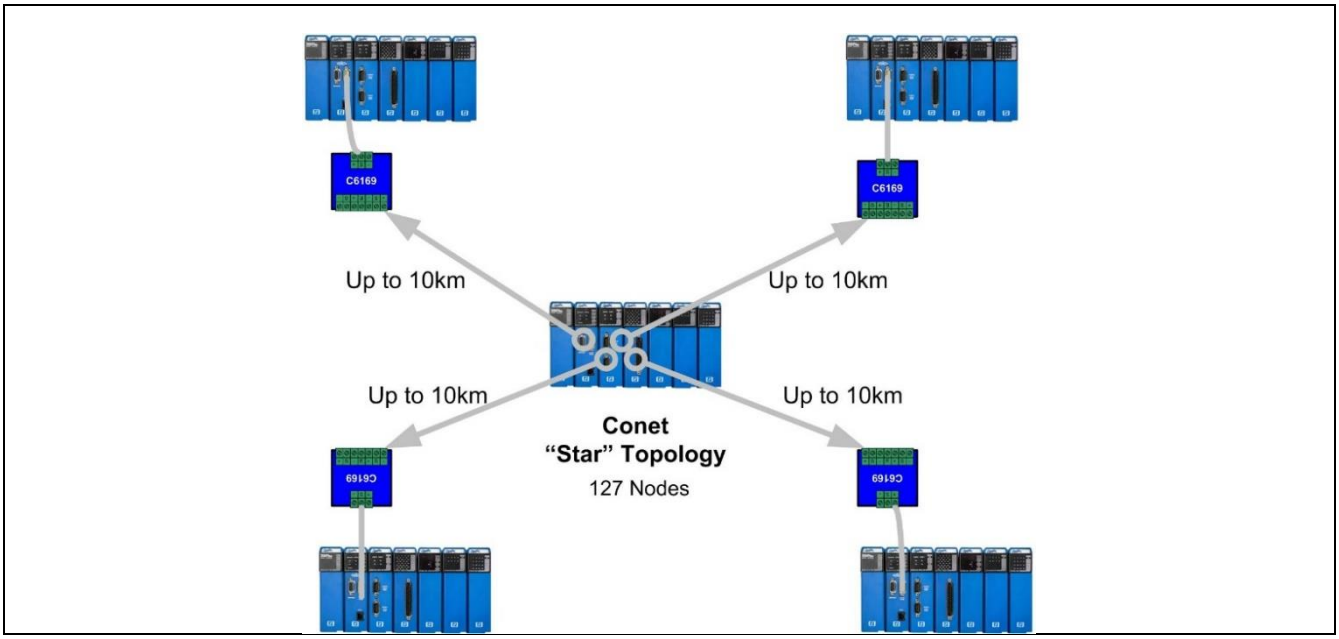


Figure 7: Conet Topology - Star

A Star may can be used anywhere on the Conet Network allowing Conet topologies to be extremely flexible and robust. Fibre optic links require the use of the Conet/s port and fibre to serial converters allowing many different fibre media to be used.

In a Ring network, each sector of the network is as if it were another Network so a Network made up of a number of smaller Networks similar to an Intranet would behave as if it were a single network. See Figure 8.

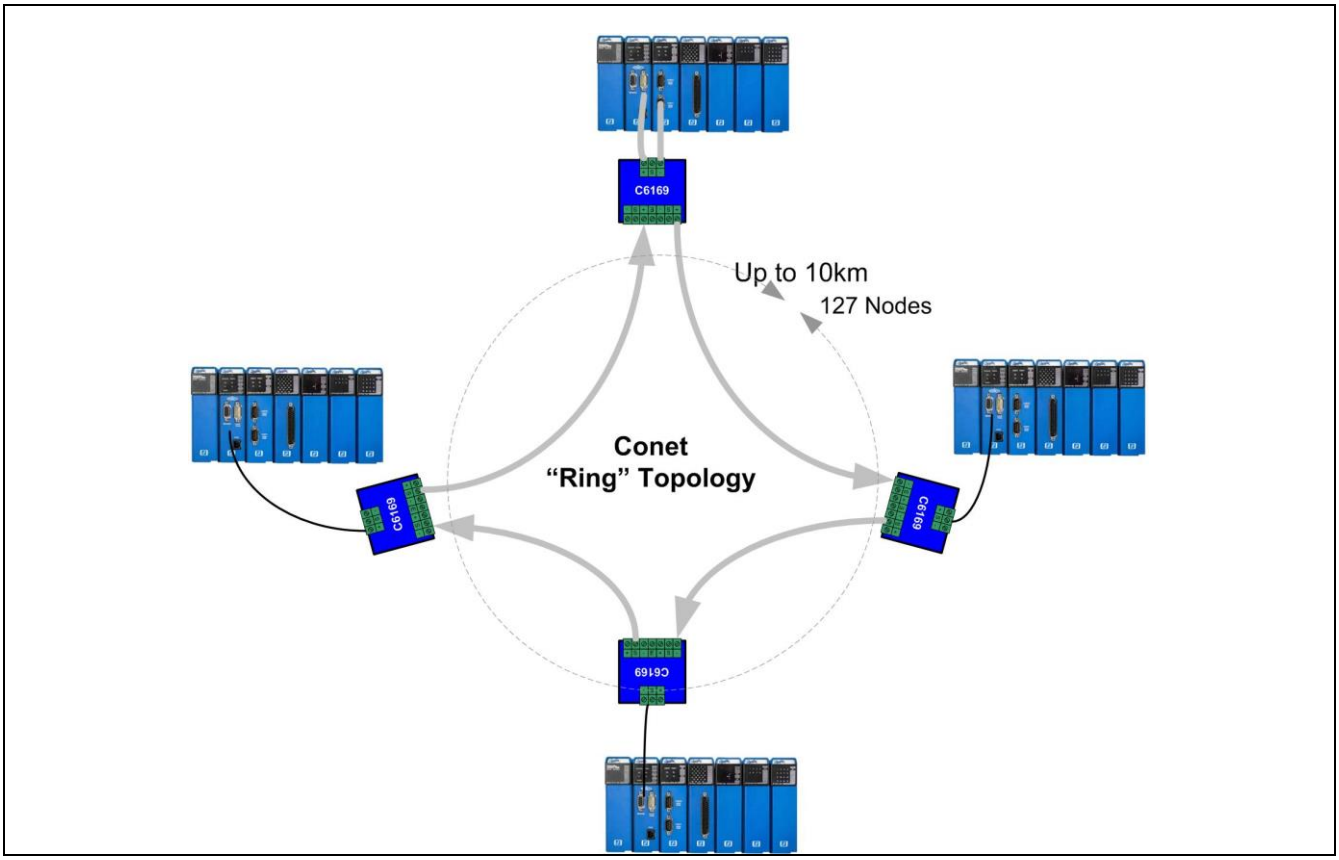


Figure 8: Conet Topology - Ring

Fibre optic and Twisted pair media can be easily mixed on a Conet network using Maxiflex as well as mixed topologies (Star and Bus) within a single network. This flexibility allows a wide range of applications to be undertaken.

Conet also can be uses to create a high availability system with the Redundant CPU in hot standby configurations. It combines two Redundant CPUs, each with their own Power Supply and Base, to create independent Primary and Secondary Master Controllers as shown in Figure 9.

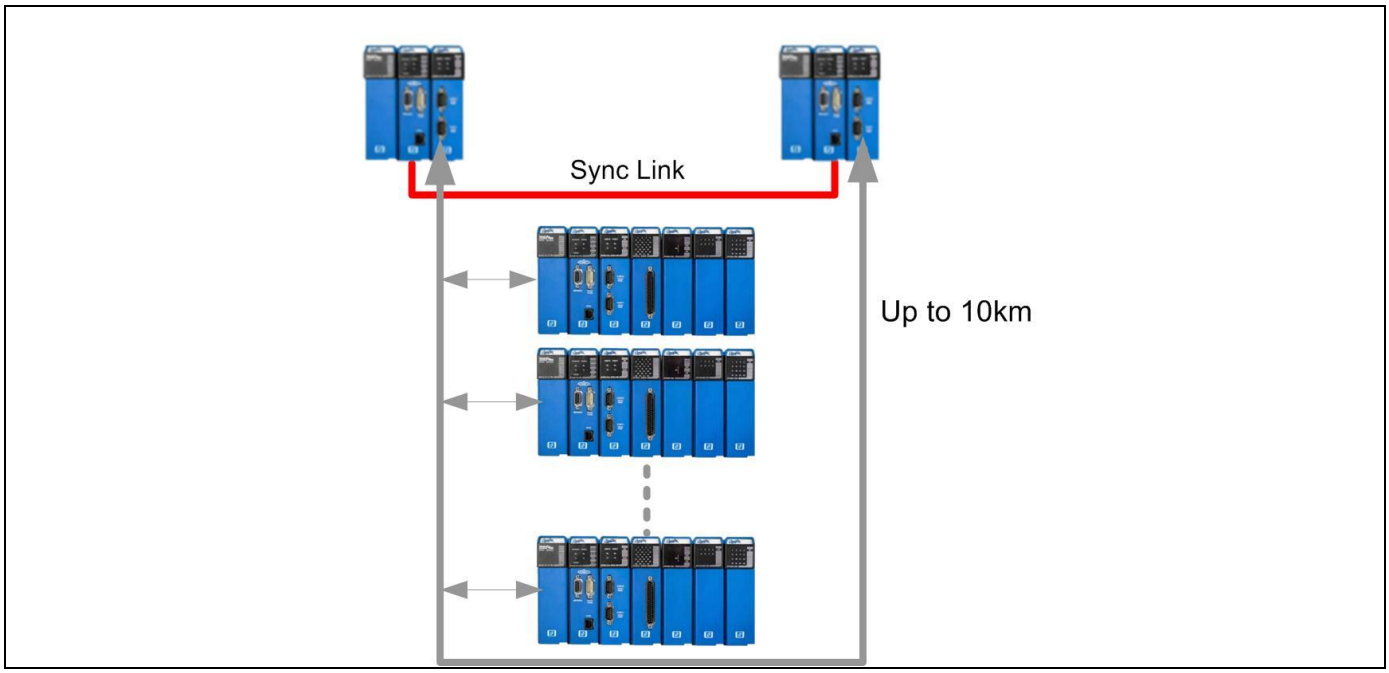
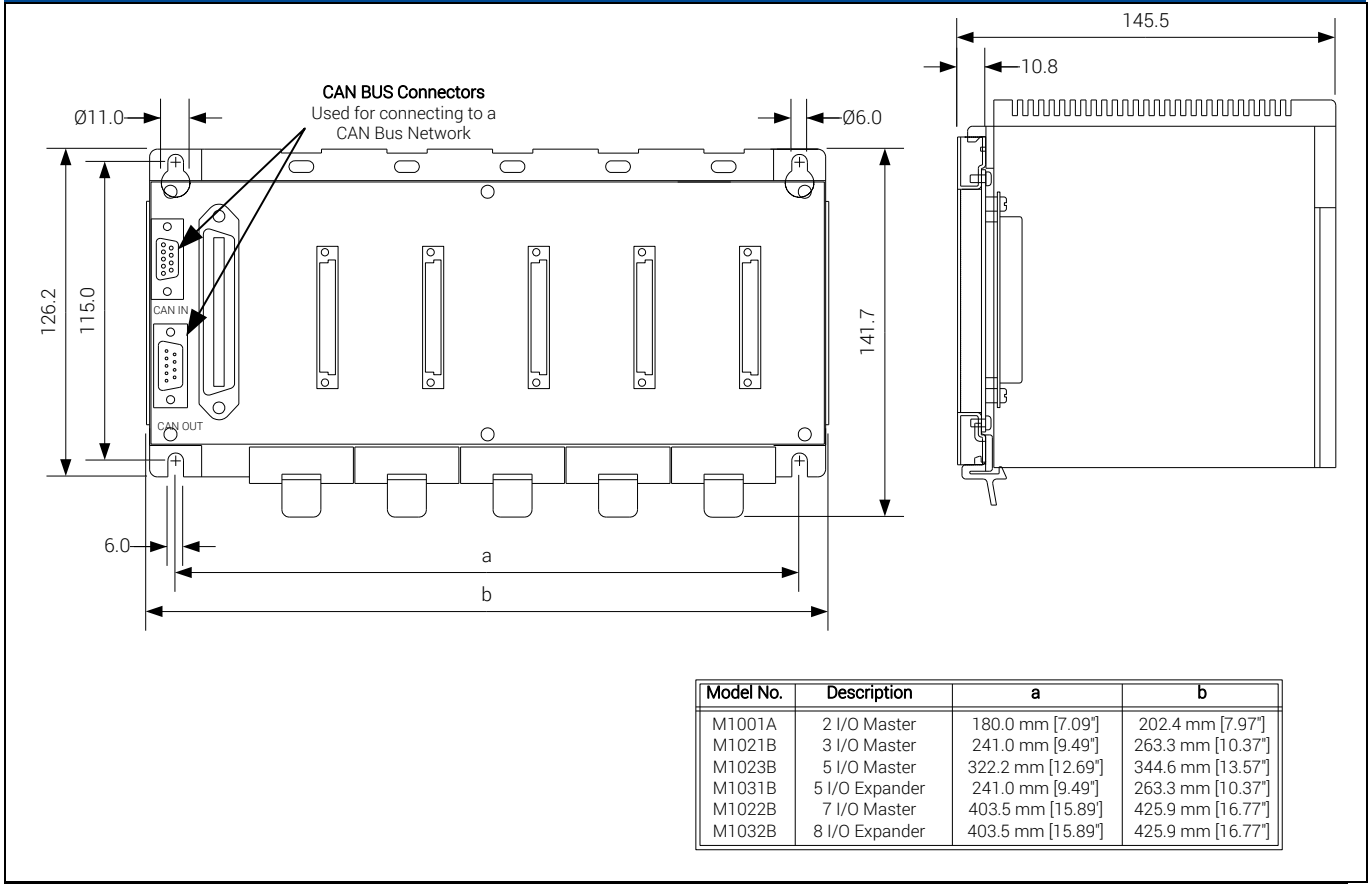


Figure 9: Conet Topology – Redundant CPUs High Availability

Mechanical

Base Dimensions and Layout



Model No.	Description	a	b
M1001A	2 I/O Master	180.0 mm [7.09"]	202.4 mm [7.97"]
M1021B	3 I/O Master	241.0 mm [9.49"]	263.3 mm [10.37"]
M1023B	5 I/O Master	322.2 mm [12.69"]	344.6 mm [13.57"]
M1031B	5 I/O Expander	241.0 mm [9.49"]	263.3 mm [10.37"]
M1022B	7 I/O Master	403.5 mm [15.89"]	425.9 mm [16.77"]
M1032B	8 I/O Expander	403.5 mm [15.89"]	425.9 mm [16.77"]

Figure 10: Base dimensions and mounting detail

Base Mounting and Module Clearance

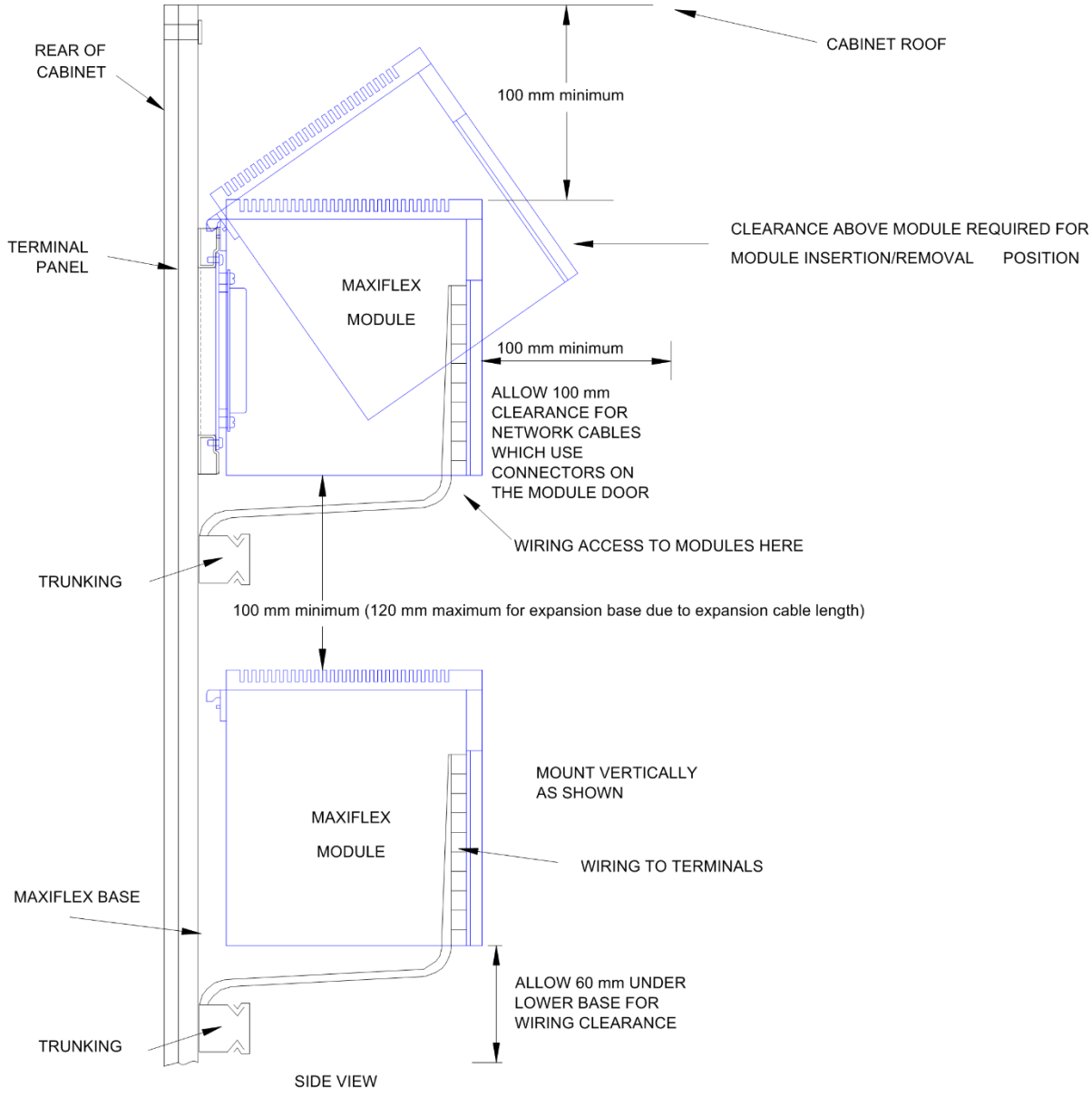


Figure 11: Base mounting arrangement and wiring information

Product Range Overview

Model No.	Short Name	Module Description	Scan Codes*	Module ID*
BASES				
M1001A	2 I/O M BASE	2 MODULE (EX. PSU) MASTER BASE (NOT EXPANDABLE)	N/A	N/A
M1021B	3 I/O M BASE	3 MODULE (EX. PSU) MASTER BASE (EXPANDABLE)	N/A	N/A
M1023B	5 I/O M BASE	5 MODULE (EX. PSU) MASTER BASE (EXPANDABLE)	N/A	N/A
M1022B	7 I/O M BASE	7 MODULE (EX. PSU) MASTER BASE (EXPANDABLE)	N/A	N/A
M1031B	5 I/O E BASE	5 MODULE EXPANDER BASE	N/A	N/A
M1032B	8 I/O E BASE	8 MODULE EXPANDER BASE	N/A	N/A
PSUs				
M1102B	DC L PSU	24VDC LOGIC	N/A	N/A
M1104C	DC LF PSU	48VDC LOGIC	N/A	N/A
M1151C	AC LF PSU	1104/220 VAC LOGIC/FIELD	N/A	N/A
CPUs				
M1241B	T2c CPU	CPU WITH INTEGRAL CONET PORT	N/A	N/A
M1249A	REMOTE I/O SCANNER	R3c REMOTE I/O SCANNER		
M1261F	P3c CPU	P3 CPU WITH INTEGRAL CONET PORT	N/A	N/A
M1262G	P3e CPU	P3 CPU WITH INTEGRAL ETHERNET TCP/IP PORT	N/A	N/A
M1264A	Maxiflex A3c Maxilarm CPU	Maxiflex A3c with Serial Port, Program Port, Conet port designed for Alarm functionality	N/A	N/A
M1267C	Maxiflex P3e-R CPU.	Maxiflex P3e-R CPU with Serial Port, Program Port, Ethernet Port and Sync Link Port.	N/A	N/A
M1261H	Maxiflex CPU P3Hc Conet/c port	As per M1261; drop-in replacement as and when M1261 no longer available	N/A	N/A
M1262H	Maxiflex CPU P3He Ethernet Port	As per M1262 and M1260 (Maxiflex P3 CPU without Ethernet connectivity); drop-in	N/A	N/A
M1264H	Maxiflex CPU A3Hc Maxilarm	As per M1264; drop-in replacement as and when M1264 no longer available	N/A	N/A
M1265H	MX CPU A3He MAXILARM	As per M1265A, drop-in replacement as and when M1265 no longer available	N/A	N/A
M1267H	Maxiflex CPU P3He-R Redundant	As per M1267; drop-in replacement as and when M1267 no longer available	N/A	N/A
M1271A	Maxiflex P4 CPU	Maxiflex P4 CPU with Serial Port, Program Port and Ethernet connectivity	N/A	N/A
M1271A-141	Maxiflex P4G4 CPU with 4G/LTE	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet and 4G GSM connectivity in	N/A	N/A
M1271A-142	Maxiflex P4G4 CPU with 4G/LTE	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet and 4G GSM connectivity in	N/A	N/A
M1271A-143	Maxiflex P4G4 CPU with 4G/LTE	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet and 4G GSM connectivity in USA –	N/A	N/A
M1271A-144	Maxiflex P4G4 CPU with 4G/LTE	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet and 4G GSM connectivity in USA –	N/A	N/A
M1271A-201	Maxiflex P4C1 CPU with Conet/c	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet and Conet/c connectivity	N/A	N/A
M1271A-301	Maxiflex P4R1 CPU with 2.4GHz	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet with integral 2,4GHx 63mW radio	N/A	N/A
M1271A-302	Maxiflex P4R2 CPU with 868MHz	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet with integral 868MHz 10mW	N/A	N/A
M1271A-305	Maxiflex P4R5 CPU with 915MHz	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet with integral 915MHz 1W licence-	N/A	N/A
M1271A-306	Maxiflex P4R6 CPU with 868MHz	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet with integral 868MHz 500mW	N/A	N/A
M1271A-307	Maxiflex P4R7 CPU with 464MHz	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet with integral 464MHz 500mW	N/A	N/A
M1271A-308	Maxiflex P4R8 CPU with 433MHz	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet with integral 433MHz 500mW	N/A	N/A
M1271A-309	Maxiflex P4R9 CPU with 169MHz	Maxiflex P4 CPU with Serial Port, Program Port, Ethernet with integral 169MHz 500mW	N/A	N/A
M1272A	Maxiflex P4D Dual Redundant	Maxiflex P4D CPU with Serial Port, Program Port, Ethernet Port and Sync Link Port.	N/A	N/A
M`1275A	Maxiflex A4e Maxilarm CPU	Maxiflex A4e with Serial Port, Program Port, Conet port designed for Alarm functionality	N/A	N/A
DIGITAL INPUT MODULES				
M1321A	8 DI C	8 DIGITAL INPUT CONTACT I/P (PFC & WETTED) FULLY ISOLATED	6	1
M1322A	16 DI/24	16 DIGITAL INPUT LOGIC ISOLATION. COMMON – 24Vdc INPUTS	6	2
M1323A	16 DI/48	16 DIGITAL INPUT LOGIC ISOLATION. COMMON – 48Vdc INPUTS	6	18
M1326B	32DI	32 DIGITAL INPUT LOGIC ISOLATION. COMMON Uses Ribbon Headers – 24Vdc INPUTS	7	4
M1327A	64DI	64 DIGITAL INPUT LOGIC ISOLATION. COMMON Uses Ribbon Headers – 24Vdc INPUTS	8	
M1330A	8DI8RO	8 DIGITAL INPUT 8 LOGIC ISOLATION RELAY OUTPUT N/O CONTACTS 2A 250VAC	10	3
DIGITAL OUTPUT MODULES				
M1341B	16 DO	16 DIGITAL OUTPUT LOGIC ISOLATION	9	7
M1342A	32 DO	32 DIGITAL OUTPUT LOGIC ISOLATION Uses Ribbon Headers	16	8
M1372A	8 RO N/O	8 RELAY O/P 2A 250V AC N/O CONTACTS	13	12
ANALOG INPUT MODULES				
M1403A	16 AI	16 ANALOG INPUT (4-20mA) 2 x COMMON NEGATIVE	14	30
M1431B	8 VC iso	8 ANALOG INPUT FULLY ISOLATED	41	42
M1432C	8TC/mV iso	8 THERMOCOU PLE/MILLIVOLT FULLY ISOLATED INPUT	41	41
M1433B	6RTD iso	6 RTD FULLY ISOLATED INPUTS	41	43
M1434E	8 AI ISO	8 ANALOGUE INPUTS HIGH PRECISION 24BIT	41	70
M1436A	4 RTD	4 INDIVIDUALLY ISOLATED RTD INPUTS (4 WIRE) Pt 100		
M1438A	8H HART INPUT	8 INDIVIDUALLY ISOLATED HART INPUTS	41	73

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Model No.	Short Name	Module Description	Scan Codes*	Module ID*
ANALOG OUTPUT MODULES				
M1412A	8 AO	8 ANALOG OUT (4-20mA) COM MON NEGSTIVE	17	34
NETWORK INTERFACE MODULES (NIMs)				
M1580A	MODBUS DUAL NIM	MODBUS SERIAL NETWORK INTERFACE MODULE	96	97
M1584B	VISTA NIM	VISTA ANALYSER NETWORK INTERFACE MODULE	95	100
M1586A	CONET PNIM	PROGRAMMABLE CONET NETWORK INTERFACE MODULE	97	102
M1588D	MIRON NIM	SERIAL MIRON RADOLOGICAL MONITORS FOR RSS SYSTEMS ex Canberra Harwell	97	104
M1589B	HART DUAL NIM	DUAL CHANNEL HART NETWORK INTERFACE MODULE	96	105
M1591B	ETHERNET NIM	ETHERNET NIM	97	107
M1592B	ULTRA NIM	SERIAL ULTRA RADIOLOGICAL MONITORS FOR RSS SYSTEMS Ex Lab Impex	97	108
M1595B	ETHERNET NIM	STANDARD ETHERNET NIM	97	
REMOTE I/O MODULES				
M1593A	RIOc	REMOTE I/O LINK CONET	97	109
M1594A	RIOE	REDUNDANT I/O LINK ETHERNET	98	110
SPECIAL FUNCTION MODULES				
M1701A	DM	DUMMY MODULE	N/A	N/A
M1711A	4 HSC	4 CHANNEL HIGH SPEED COUNTER MODULE. : UP TO 50kHz	127	126
M1712A	8 HSC	8 CHANNEL COUNTER MODULE. : CH 1-7 1kHz CH 8 UP TO 10kHz	106	55
M1713B	4PI	4 CHANNEL PULSE INTEGRITY MODULE	107	56
M1714B	MP	METER PROVER MODULE	108	57
M1715A	2PFC	2 CHANNEL ISOLATED FREQUENCY COUNTER MODULE		
M1760A	32SOE 9-30VDC	32 CHANNEL SOE MODULE 9-30VDC INPUTS	20	20
M1761A	32SOE 30-60VDC	32 CHANNEL SOE MODULE 30-00VDC INPUTS.	20	20
PROGRAMMING CABLES (Refer to Section "Programming the CPU" for correct cable for your application)				
C1179A	PROGRAMMING CABLE	OMNIFLEX ISOLATED USB TO RJ12 PROG. CABLE	N/A	N/A
M1841B	PROGRAMMING CABLE	IEC61131 ISaGRAF SOFTWARE V6 DONGLE	N/A	N/A
ACCESSORIES				
M1811A	EC 400	EXPANDER CABLE 400mm	N/A	N/A
M1850A	MODULE KEYS	MODULE KEYS TO FIX MODULE POSITIONS ON BASES	N/A	N/A
C1468A	TIME SYNC CABLE	INTER RACK TIME SYNC CABLE MASTER TO SLAVE RACK	N/A	N/A
C1469A	TIME SYNC TERMINATOR	TIME SYNC CANBUS TERNINATOR IN DB9 PLUG	N/A	N/A
SOFTWARE				
CC030A-X	ISaGRAF 32 bit	IEC61131 PROGRAMMER"S WORKBENCH	N/A	N/A
CC030B	ISaGRAF 64-bit	IEC61131 PROGRAMMER"S WORKBENCH	N/A	N /A
M1921A	MAXILARM	MAXILARM DISTRIBUTED ANNUNCIATOR SOFTWARE	N/A	N/A
CC018A	OMNI4000 WIN 1200LIC	OMNI4000 WINDOWS	N/A	N/A
CC019A	AES CONFIGURATOR	AES CONFIGURATOR FOR ALARM SYSTEMS	N/A	N/A

*Note: Each Input and Output module has a unique ID and scan code which the CPU recognises when the module is plugged in. Values are in decimal.

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Specifications

Power Requirements

Range of Power Supply Modules

M1101A	24 Vdc; Logic; Solar option and battery charger
M1102A	24 Vdc; Logic only
M1151A	110/220 Vac; Logic; Field
M1152A	110/220 Vac; Logic with charger
M1154A	110/220 Vac; Field only(24V/2A)

Power Consumption (Worst case base full with expander)

24 Vdc	40 W max.
110/220 Vac	50 VA max

Electrical Connections

Location	Behind Front panel door
Via	Screw Terminals
Wire Gauge	1,5 mm^2 recommended 2,0 mm2 maximum

Environmental

Operating Temperature	20 to +70 °C (Digital Modules only) 0 to 60 °C (Analog Modules only)
Storage Temperature	-40 to 85 °C
Humidity	5% to 95% RH (non-condensing)
Ingress Protection (I.P.)	IP30 (mounted in a panel)

Mass

M1001A	2I/O Master Base	1,6 kg*
M1021A	3I/O Master Base	2,0 kg*
M1022A	7I/O Master Base	4,5 kg*
M1031A	5I/O Expander Base	1,9 kg*
M1032A	8I/O Expander Base	4,5 68-2-30 kg*

*These figures are the approximate average as the exact mass will depend on the type of modules fitted

Compliance to Standards

Vibration	10 - 150 Hz, 1G (9.8 m/s2), 20 cycles, swept at 1 octave/min Tested in accordance with IEC 68-2-6
Shock	30G (294 m/s^2) for 18 ms in packing Tested in accordance with IEC 68-2-27
HF Disturbance	Meets IEC 255-22-1 Class 3 -2,5 kV common mode, 1 kV differential

Safety

Complies	With Low Voltage directive 73/23/EEC 26 March 1973
Standard	Meets HD 401 S1 1980 (IEC348: 1978) Safety requirements for electronic measuring apparatus

Voltage Withstand/Impulse Test

This test applies only to certain modules. Generally Isolated digital and analogue modules and isolated power supplies

Class 3	Accordance with IEC 255-2
Impulse	1,2 micro second rise time and 50 micro second duration Peak amplitudes are a) 1 kV Differential mode (between an input/output and its common.) b) 5 kV Common mode (between inputs/outputs and the bus log

Electro-Magnetic Compatibility

Complies with	Electromagnetic directive 89/336/EEC of 3 May 1989 as amended by directive 92/31/EEC of 28 April 1992.
Applicable specifications	EN50081(2)-1: 1992 Generic emission and immunity standard EN55011 - emissions EC 801 - immunity Part 2 : Electrostatic discharge requirements (HD 481.2 S1) Level 4 - 15 kV Part 3 : Radiated electromagnetic field requirements (HD 481.3S1) - Meets Class 3 - 10 V/m electric field in the range 27 to 500 MHz Part 4 : Fast Transients/Burst requirements - Level 4 - 2 kV both common and differential mode.

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