TELETERM M2 Series Programmable RTU's

Model C232xA Teleterm RTU's with integrated communication ports.

DATASHEET

- Keep control of your assets 365/24/7
- Never before has remote sensing and control been as cost effective.
- With capability for most communication means as well as Internet access there is no longer an excuse for not staying in touch, and in control.
- Add logic control and PC compatible data logging and you have a solution that will suit most applications.
- The versatile "M2M" Solution

FEATURES

- **Integrated Communications Port (see selected models)**
- **12 Inputs and/or Outputs (Analog or Digital)**
- **9 - 30V dc powered.**
- **On-board temperature sensor and voltage monitor**
- **Integral Real-Time Clock with Battery Backup**
- **Programmable for a wide range of applications.**
- **Wide operating temperature range**
- **Compact size for tight spaces**
- **Convenient DIN Rail mounting**

OVERVIEW

The TELETERM M2 is a state-of-the-art RTU range designed to enable a wide range of devices and machines with state-of-the-art connectivity.

Everyone is aware of the enormous advances to efficiency and productivity that the latest wireless telecommunications technology and the Internet have brought to our society. With an estimated three times as many machines in the world as people, can you imagine the benefits to you of being able to harness this technology to manage your hard assets as well – regardless of where they are located!

"M2M" is the latest buzzword that encapsulates the technology of "machine-to-machine", "machine-to-mobile", and "machine-to-man" communications required to make this a reality. "M2M" is an enabling technology in remote sensing and asset management. Using the capability that "M2M" provides, you need never feel out of touch or out of control again.

The Teleterm M2 Series provides the ideal cost effective interface to your assets or processes to provide the control and information that you need to optimise your operations.

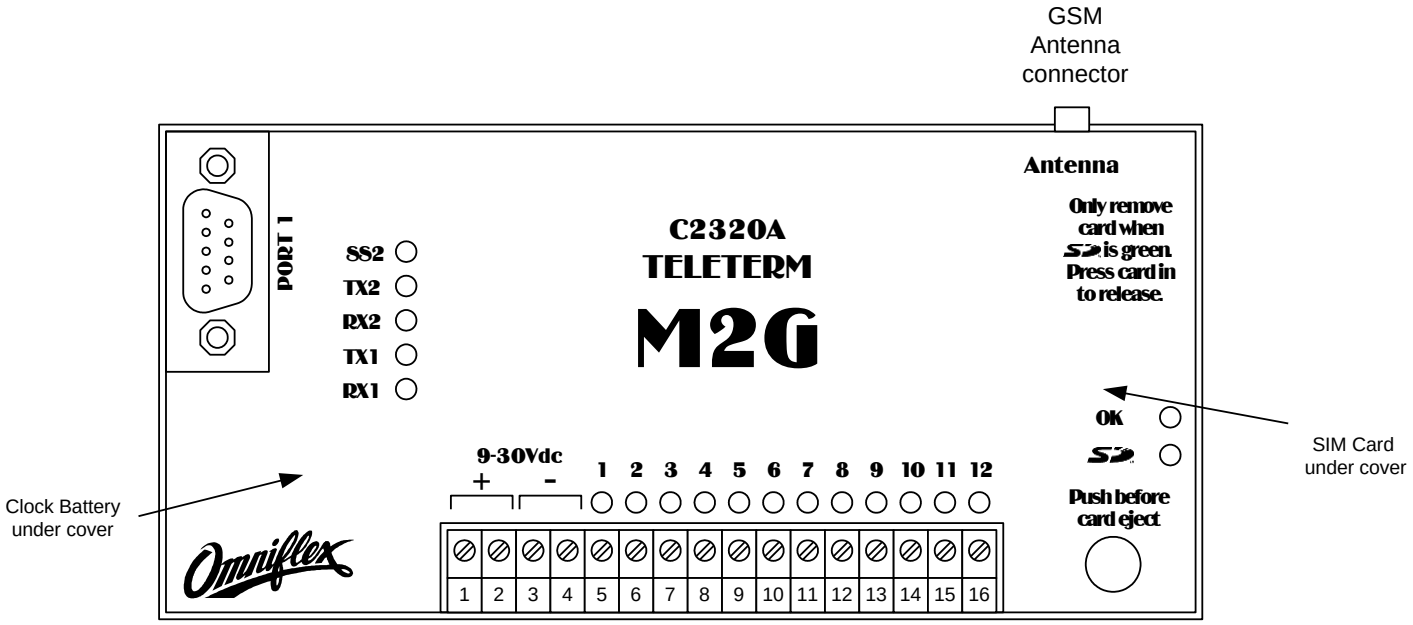
The M2 Series is available with radio, CONET industrial LAN, GSM/GPRS, CDMA or Ethernet communications ports to suit your application.

Typical applications for the M2 include:

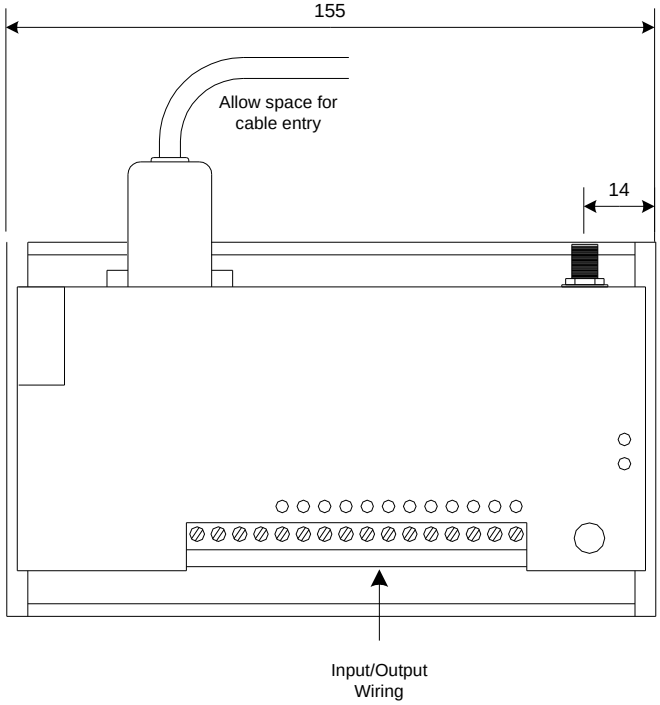
- Vending machines
- Remote Site Monitoring
- Transport/Cargo Monitoring
- Traffic Management
- Remote inventory monitoring
- Remote Digital Advertising Sign management
- Energy Management and Meter Reading.
- Environmental Monitoring

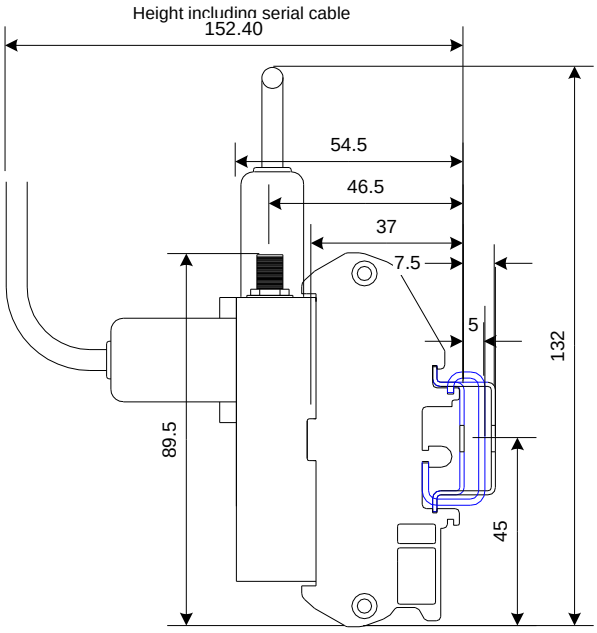
Get in touch – Stay in control with the Teleterm M2 Series from Omniflex.

General Layout



Mechanical Dimensions

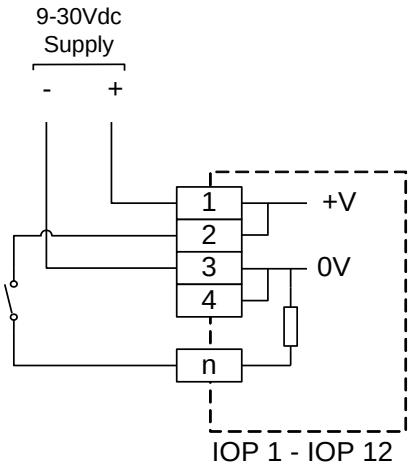




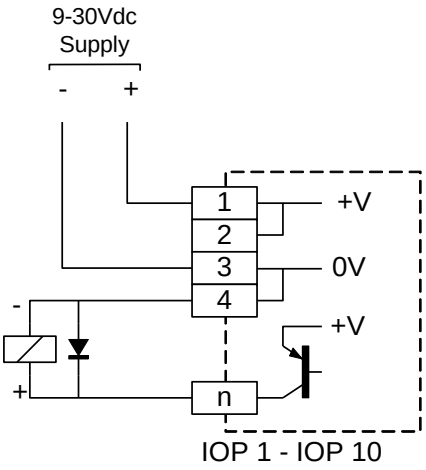
Communication Functions by Model

Product	Order Code	12 I/O	RS232/ RS485 Port	SD Card (optional)	GSM/ GPRS Port	RS232 Port	Conet Port	Ethernet Port	Radio Port	CDMA Port
M2G	C2320A	✓	✓	✓	✓					
M2S	C2321A	✓	✓	✓		✓				
M2C	C2322A	✓	✓	✓			✓			
M2E	C2323A[1]	✓	✓	✓				✓		
M2R	C2324A	✓	✓	✓					✓	
M2A	C2325A	✓	✓	✓						✓

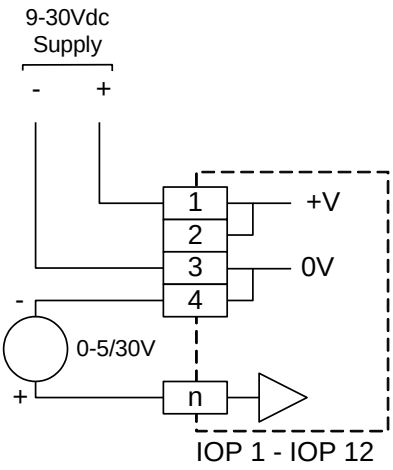
Electrical Connections



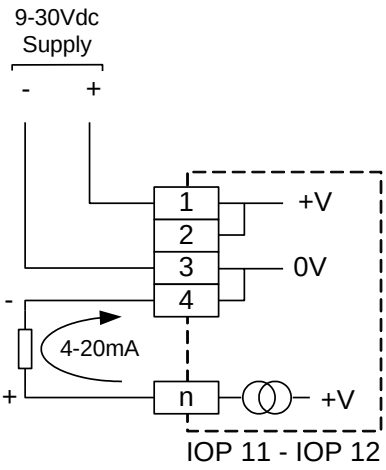
DIGITAL INPUTS



DIGITAL OUTPUTS



ANALOGUE INPUTS



ANALOGUE OUTPUTS

Input/Output Configurable Options

The M2G is equipped with 12 versatile input/output points (I/O points or IOP's). Each I/O point can be individually configured from the options given in the following table:

I/O Point	Terminal No.	Digital Input	Analogue Input	Digital Output	Analogue Output
1	5	Yes	0-30Vdc	Yes	-
2	6	Yes	0-30Vdc	Yes	-
3	7	Yes	0-5Vdc	Yes	-
4	8	Yes	0-5Vdc	Yes	-
5	9	Yes	0-5Vdc	Yes	-
6	10	Yes	0-5Vdc	Yes	-
7	11	Yes	0-5Vdc	Yes	-
8	12	Yes	0-5Vdc	Yes	-
9	13	Yes	0-5Vdc	Yes	-
10	14	Yes	0-5Vdc	Yes	-
11	15	Yes	0-30Vdc	-	0/4-20mA
12	16	Yes	0-30Vdc	-	0/4-20mA

Note 1: See the "Specifications" section of this document for detailed electrical specifications of each I/O point option
Note 2: All Digital Inputs can be configured as Pulse Counters

SPECIFICATIONS COMMON TO ALL MODELS

Input/Outputs

All M2 RTU's have 12 Input/Output Points (IOP) that are configurable in software as analogue or digital, inputs or outputs.

(See the table above for a matrix of available functions on each I/O Point.)

IOP 1 to IOP 10 can be Digital Input, Digital Output, or Analogue Input

IOP 11 and IOP 12 can be Digital input, Analogue Input or Analogue Output.

As a Digital Input (IO Points 1 to 12)

Type	Current Sinking (Switch to +V to operate)
Input Impedance	5 kohms nominal.
Input OFF Condition	Input < 2Vdc
Input ON Condition	Input > 5Vdc

As a Digital Output (IO Points 1 to 10)

Type	Current Sourcing (Solid State Switch to +V)
ON State Rated Current	< 100mA continuous maximum per output < 200mA peak (<10ms) max, per output < 500mA total for all outputs simultaneously
ON State Volt Drop	< 3V at maximum rated load
OFF State Rated Leakage Current	< 0.1mA at maximum supply voltage

As an Analogue Input (I/O Points 1, 2, 11 and 12)

Type	Voltage Input referenced to 0V supply.
Range	0-30Vdc (software configurable to smaller ranges such as 1-5Volts)
Accuracy	0.25% of full scale
Resolution	< 40mV

As an Analogue Input (I/O Points 3 to 10)

Type	Voltage Input referenced to 0V supply.
Range	0-6Vdc (software configurable to smaller ranges such as 1-5Volts)
Accuracy	0.25% of full scale
Resolution	< 10mV

As an Analogue Output (I/O Points 11 and 12)

Type	4-20mA Source into 0V connected load
Load	< 300 ohms at supply voltage = 12 volts < 600 ohms at supply voltage = 24 volts
Maximum Range	0 to 23 mA (software configurable to smaller ranges such as 4-20mA or 0-10mA)
Accuracy	< 0.25% of full scale

TELETERM M2 Series Programmable RTU's

Model C232xA Teleterm RTU's with integrated communication ports.

General Specifications

Power Requirements

Power Supply Voltage	9 – 30Vdc (ripple < 5%)
Power Requirements	80mA typical at 12Vdc supply 40mA typical at 24Vdc supply

Programming

Language	EZIForth (not required for simple RTU functions).
Program Space	16kBytes Program memory 4kBytes User RAM memory

Environmental Conditions

Storage Temperature	-25°C – 85 °C (-13°F – 185°F)
Operating Temperature	-10°C – 60 °C (+14°F – 140°F)
M2G Radio compliance	-10°C – 50 °C (+14°F – 122°F)

Compliance with Standards

Safety	EN 60950:1995
Emissions	EN 55011 EN50081-2:1994 Group I, Class A EN50082-2
Immunity – ESD	IEC 61000-4-2:1995, level 3
Immunity – RF Fields	IEC 61000-4-3:1995, level 3
Immunity – Fast Transients	IEC 61000-4-4:1995 2 kV – DC power port 1 kV – input/output lines

Weight

Unpacked	250gm approx.
Packed	350gm approx.

Front Panel Serial Port (available on all models)

Type	Asynchronous serial port
Protocols	Supports Conet/s and Modbus ASCII and RTU as standard, but other protocols may be downloaded to the CPU.
Baud Rate	300 – 38,400 baud.
Maximum cable length	15 meters (50ft) in RS232 mode 1200m (4000ft) in RS485 mode
Connection	9 pin sub-miniature DB9 (male).

Network Communications Specifications for the Teleterm M2G - Model C2320A

Network Port

Type	GSM/GPRS mobile network

GSM/GPRS Connectivity

GSM Capability	Dual Band GSM/GPRS (EGSM900/1800) designed for SMS and data applications Fully compliant with ETSI GSM Phase 2
GPRS Capability	GPRS Class 10, PBCCH support Coding schemes: CS1 to CS4
Data Services	300....14400 BPS, asynchronous
SIM Card	Small (3Volt only)
Antenna	Remote mounted antenna connected via MMCX connector on M2G.

SMS

Transmission Method	SMS's can be sent by the user program in the M2G.
Number of messages	Only limited by the installed User program. (Consult factory for application advice).

GPRS

Transmission Method	The GPRS service can be used to send TCP/IP session data to third party applications. This is an advanced function, only recommended to experienced programmers.

Remote Programming and Configuration

Method	The Teleterm M2G allows remote dial-in for the purpose of configuration and program changes remotely. (CAUTION: GSM only supports up to 14400 baud in remote dial in, so large program downloads will be time consuming.)

Data2Desktop Service Compatibility

Secure Access to data from the M2G is made possible from a standard Web Browser using the Omniflex "Dat2Desktop" Web Service. The Omniflex "Data2Desktop" Service stays in touch with your RTU's and keeps an up-to-date copy of data in real time. This service is available by monthly subscription in selected regions.

Compatibility	The M2G is designed for full compatibility with the OMNIFLEX Data2Desktop service via GPRS. Installation of the D2D Software pack is required to connect to this service. (Consult the factory for application advice).

Network Communications Specifications for the Teleterm M2S - Model C2321A

Network Port	
Type	Asynchronous RS232/485 serial port
RS232 Connector	
Type	9 pin sub-miniature male (DB9M).
Serial Protocols supported	Supports Conet/s and Modbus ASCII and RTU – Master or Slave as standard, but other protocols may be downloaded. (Consult the factory for advice on additional protocols)
Baud Rate	300 – 38,400 baud.
Maximum cable length	15 meters (50ft)

PIN	I/O	RS232	DESCRIPTION
1	I	CD	Carrier Detect
2	I	RD	Receive Data
3	O	TD	Transmit Data
4	O	DTR	Data Terminal Ready
5	-	SG	Signal Ground
6	I	DSR	Data Set Ready
7	O	RTS	Request To Send
8	I	CTS	Clear To Send
9	I	RI	Ring Indicator

Modem Power Connector	
Type	Molex Type 7478 (3 pins)
Uses	This connector may be used to power an external modem

PIN	NAME	DESCRIPTION
1	+Vs	+V supply voltage (switched) 1A max
2	RD	+5Vdc (250mA max.)
3	TD	0V return

Network Communications Specifications for the Teleterm M2C - Model C2322A

Network Port	
Type	CONET Industrial LAN
Applications	(token passing peer-to-peer network designed to operate on existing plant cabling).

Baud Rates	62.5 kBaud on Standard Baud Rate 7800 Baud on Slow Baud Rate.
Maximum cable length	10km
No of nodes	126 max on one network

Network Communications Specifications for the Teleterm M2E - Model C2323A

Network Port	
Type	10/100 UTP Ethernet
Specifications	
Network Protocol Support	TCP/IP

Protocols	Modbus/TCP Class 0 Conet/e for remote programming and network routing.
IP Addressing	Fixed IP set during configuration.

Network Communications Specifications for the Teleterm M2R - Model C2324A

USA & Australian approved models	
Operating Band	900Mhz
Special Radio Licence Requirements	None. The Teleterm M2R operates in the licence-free ISM bands.
Transmit Power	5 – 1000mW selectable
Receiver Sensitivity	-99 dBm typical
Modulation	FHSS FSK
RF Data Rate	76.8 kbits per second
Security	One byte system ID plus DES
Range – line of sight (with 3 dBi gain antenna)	Up to 20km (5km typical)
Antenna	External uni-directional antenna

European standards approved models	
Operating Band	868Mhz
Special Radio Licence Requirements	None. The Teleterm M2R operates in the licence-free ISM bands.
Transmit Power	5 – 250mW selectable
Receiver Sensitivity	-103 dBm typical
Modulation	Single Frequency FSK
RF Data Rate	28.8 kbits per second
Security	One byte system ID plus DES
Range – line of sight (with 3 dBi gain antenna)	Up to 20km (5km typical)
Antenna	External uni-directional antenna

Network Communications Specifications for the Teleterm M2A - Model C2325A

Network Port	
Type	CDMA mobile network
GSM/GPRS Connectivity	
CDMA Capability	Dual Band 900/1800 CDMA 1xRTT
Network compatibility	Consult factory for network compatibility
Antenna	Remote mounted antenna connected via MMCX connector on M2G.
SMS	
Transmission Method	SMS's can be sent by the user program in the M2A.
Number of messages	Only limited by the installed User program. (Consult factory for application advice).
1xRTT	
Transmission Method	The 1xRTT service can be used to send TCP/IP session data to the Data2Desktop Service.

Remote Programming and Configuration	
Method	The Teleterm M2A allows remote dial-in for the purpose of configuration and program changes remotely.
Data2Desktop Service Compatibility	
Secure Access to data from the M2A is made possible from a standard Web Browser using the Omniflex "Data2Desktop" Web Service. This service is available by monthly subscription.	
Compatibility	The M2A is designed for full compatibility with the OMNIFLEX Data2Desktop service via 1xRTT data service. Installation of the D2D Software pack is required to connect to this service. (Consult the factory for application advice).

Ordering Information

ORDER CODE	PRODUCT	DESCRIPTION
C2320A	Teleterm M2G	Teleterm M2G Programmable RTU equipped with GSM/GPRS integral modem. Supplied with 0dB gain magnetic mount GSM antenna and configuration software.
C2321A	Teleterm M2S	Teleterm M2S Programmable RTU equipped with second RS232 serial port. Supplied with configuration software.
C2322A	Teleterm M2C	Teleterm M2C Programmable RTU equipped with CONET network port. Supplied with configuration software.
C2323A	Teleterm M2E	Teleterm M2E Programmable RTU equipped with 10/100 UTP Ethernet network port. Supplied with configuration software.
C2324A-0-868	Teleterm M2R for 868MHz ISM band	Teleterm M2R Programmable RTU equipped with 868MHz radio network port. (Approved for use in Europe and South Africa) Supplied with 0dB gain antenna and configuration software.
C2324A-1-868	Teleterm M2R with SD Card for 868MHz ISM band	Teleterm M2R Programmable RTU equipped with 868MHz radio network port. (Approved for use in Europe and South Africa) Equipped with SD Memory Card slot plus one 64Mbyte (or greater) SD Memory Card Supplied with 0dB gain antenna and configuration software.
C2324A-0-900	Teleterm M2R for 900MHz ISM band	Teleterm M2R Programmable RTU equipped with 900MHz radio network port. (Approved for use in USA and Australia) Supplied with 0dB gain antenna and configuration software.
C2324A-1-900	Teleterm M2R with SD Card for 900MHz ISM band	Teleterm M2R Programmable RTU equipped with 900MHz radio network port. (Approved for use in USA and Australia) Equipped with SD Memory Card slot plus one 64Mbyte (or greater) SD Memory Card Supplied with 0dB gain antenna and configuration software.
C2324A-0-2.4G	Teleterm M2R for 2.4GHz ISM band	Teleterm M2R Programmable RTU equipped with 2.4GHz radio network port. (Approved for use internationally) Supplied with 0dB gain antenna and configuration software.
C2324A-1-2.4G	Teleterm M2R with SD Card for 2.4GHz ISM band	Teleterm M2R Programmable RTU equipped with 2.4GHz radio network port. (Approved for use internationally) Equipped with SD Memory Card slot plus one 64Mbyte (or greater) SD Memory Card Supplied with 0dB gain antenna and configuration software.
C2325A	Teleterm M2A	Teleterm M2A Programmable RTU equipped with CDMA integral modem. (Compatible with Telstra CDMA network - Australia) Supplied with 0dB gain magnetic mount GSM antenna and configuration software.
C2325A-1	Teleterm M2A with SD Card	Teleterm M2A Programmable RTU equipped with CDMA integral modem. (Compatible with Telstra CDMA network - Australia) Equipped with SD Memory Card slot plus one 64Mbyte (or greater) SD Memory Card Supplied with 0dB gain magnetic mount GSM antenna and configuration software.