TELETERM M2C Programmable RTU

Model C2360B-21 Teleterm RTU with integrated Conet port.

- 12 Configurable Inputs and Outputs

- Conet communications port

- SD Card Logging

- Low power operation

FEATURES

- **Low Power operation**
- **12 Inputs and/or Outputs (Analog or Digital)**
- **9 - 30V dc powered.**
- **SD Memory Card Slot for off-line data logging.**
- **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 M2C series is a state-of-the-art RTU range designed to expand the possibilities of remote monitoring and control by providing a cost effective platform with a wide range of features.

Communications options include GSM, 3G UMTS, CDMA, licence-free Radio in a number frequency bands and, in this version, Conet Industrial LAN for use over existing plant cabling, and RS232 and RS485 serial.

The TELETERM M2C comes with 12 universal I/O that can be configured for analogue or digital input or output according to your needs.

The on board RS232/485 port can be used to acquire data from other third party devices using either the Modbus protocol, or by downloading a custom software protocol "plug-in". This feature allows a wide variety of third party devices to be supported.

The on board Conet port can be used to acquire data from other Conet devices using the onboard Conet port.

he low power consumption of the Teleterm M2 makes it suitable for use in solar powered and battery powered applications.

The Teleterm M2 also incorporates an SD memory card slot to support local data logging.

Typical applications for the M2 include:

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

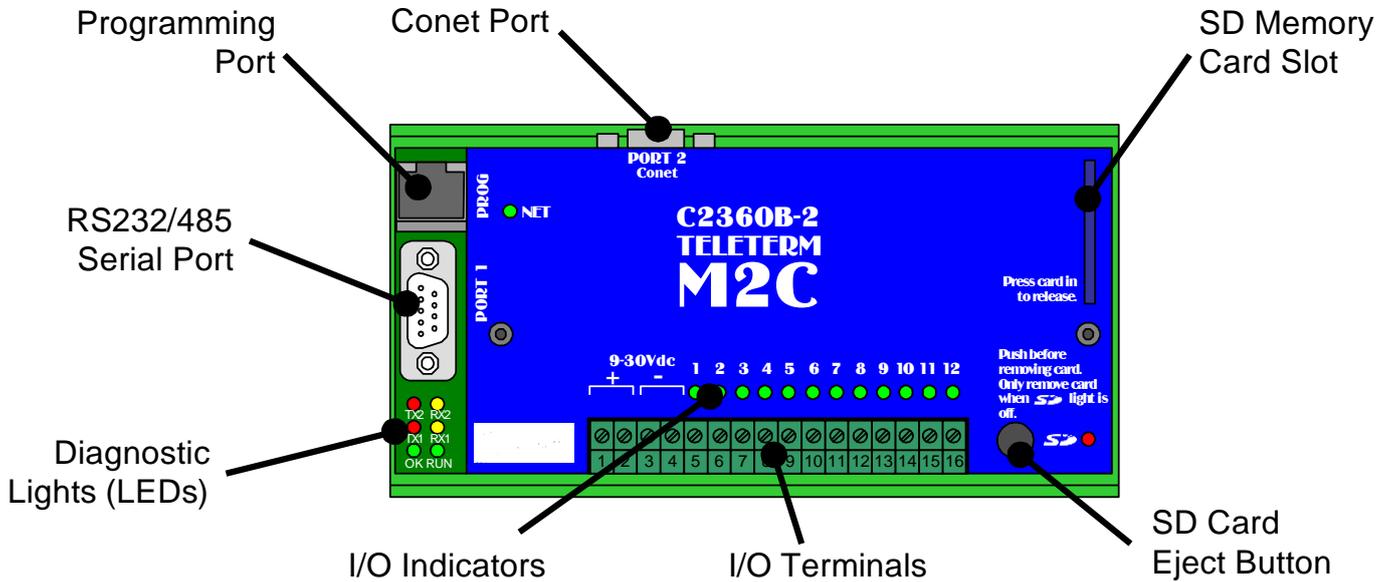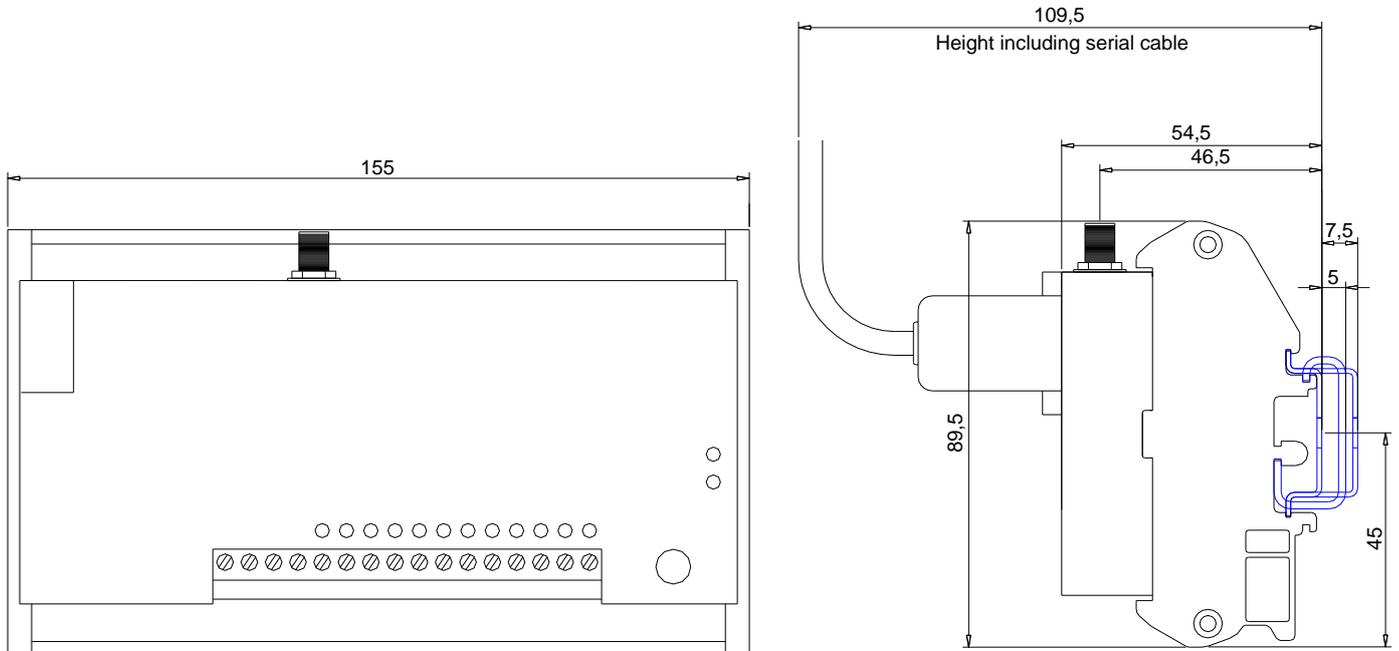Stay in touch – Take control with the Teleterm M2 Series from Omniflex.

General Layout

Programming Port

Conet Port

SD Memory Card Slot

RS232/485 Serial Port

Diagnostic Lights (LEDs)

I/O Indicators

I/O Terminals

SD Card Eject Button

Mechanical Dimensions

155

109,5
Height including serial cable

54,5

46,5

7,5

5

89,5

45

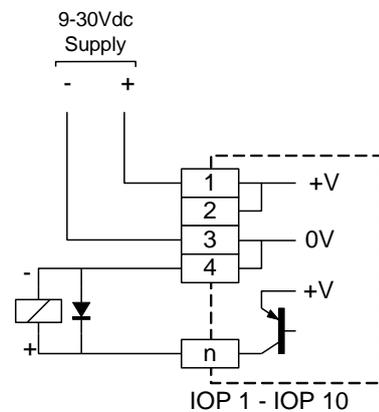## Input/Output Configurable Options

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 specifications of each I/O point option.
Note 2: All 0-30V analogue inputs have increased resolution over the range 0-6V (equivalent to the 0-5V inputs).
Note 3: All Digital Inputs can be configured as Pulse Counters or Hours Counter.
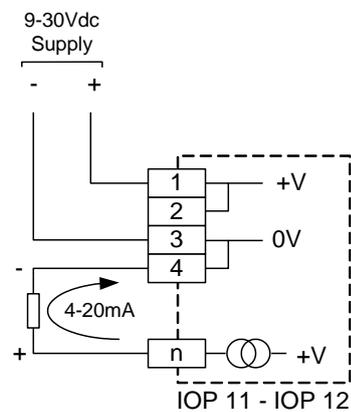*Note 4*: All Digital Outputs can be configured as Pulse outputs (normally ON or normally OFF).
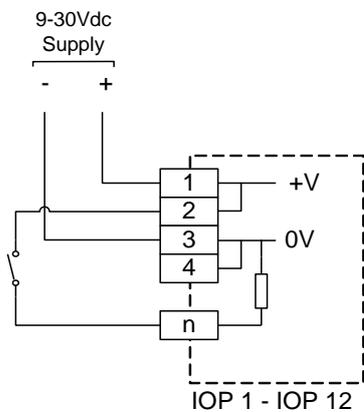
DIGITAL INPUTS

DIGITAL OUTPUTS
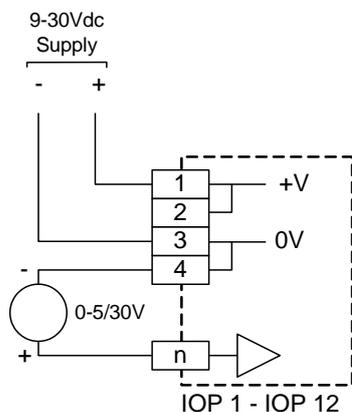
ANALOGUE INPUTS

ANALOGUE OUTPUTS

SPECIFICATIONS

Input/Outputs

All M2 RTU's have 12 Input/Output Points (IOP 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.)

As a Digital Input (IO Points 1 to 12)

Type	Current Sink (Switch to +V to operate)
Input Impedance	5 kohms nominal.
Input OFF Condition	Input < 2Vdc
Input ON Condition	Input > 3Vdc
Functions	Software selectable as: ON/OFF Input Counter Input (counts rising edge pulses) Hours Input (counts hours while input is on to resolution of 0.01 hours).

As a Digital Output (IO Points 1 to 10)

Type	Voltage Source (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
Functions	Software selectable as: ON/OFF ON Pulse (configurable 10ms – 300s) OFF Pulse (configurable 10ms = 300s)

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

Type	Voltage Input referenced to 0V supply.

Range	0-30Vdc (software configurable to smaller ranges such as 1-5Volts)
Accuracy	< 0.15% of reading +6mV from 0 to 5.5V < 0.15% of reading +30mV from 5.5 to 30V
Resolution	6mV from 0 to 5.5 Volts nominal (10 bits) 33mV from 5.5 to 30Volts nominal (10 bits)

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

Type	Voltage Input referenced to 0V supply.
Range	0-5.5Vdc (software configurable to smaller ranges such as 1-5Volts)
Accuracy	< 0.25% of reading +6mV
Resolution	6mV nominal (10 bits)

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

Type	4-20mA Source into 0V connected load
Load	Calculate maximum load as follows: $R_{max} = (V_{supply} - 5V) \div .02$ ohms Examples: 11V Supply: R_{max} = 300 ohms 13.8V Supply: R_{max} = 440 ohms 22V Supply: R_{max} = 300 ohms 24V Supply: R_{max} = 950 ohms 27.6V Supply: R_{max} = 1130 ohms
Maximum Range	0 to 23 mA (software configurable to smaller ranges such as 4-20mA or 0-10mA)
Accuracy	< 0.25% of full scale

General Specifications

Power Requirements

Power Supply Voltage	9 – 30Vdc (ripple < 5%)	
Average Current	80mA at 12Vdc	40mA at 24Vdc

IEC61131-3 Programming (Optional)

Six graphical Languages	SFC – Structured Flow Chart FC – Flow Chart FBD – Function Block LD – Ladder Diagram ST – Structured Text IL – Instruction List
Programming Environment	Windows PC based "Omniflex ISaGRAF Application Workbench"

Protocol Programming

Language	EventForth
Program Space	16kBytes Program memory 8kBytes 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)

Processor

Type	Dual Core 16 Bit Processor
Clock Speed	40MHz
Memory – Flash / RAM	512kB / 256kB

Real Time Clock

Resolution	10ms
Accuracy	1 min per month
Battery Life	> 1 year with power off > 5 years with power on.
Battery Type	3V Lithium Cell type CR2032

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

Packed/Unpacked	350g/250g approx.

Front Panel Serial Port

Type	Asynchronous serial port
Protocols	Supports the following protocols as standard: • Conet/s • Modbus ASCII (Master or Slave) • Modbus RTU (Master or Slave). • Other protocols written in the EventForth programming language may be downloaded.
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).
RS232/422/485	Selected by the wiring to the DB9 connector
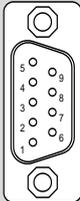
Pin	Communication Standard	
	RS232	RS485
1	Do not connect	Rx Data + (In)
2	Rx Data (In)	Rx Data – (In)
3	Tx Data (Out)	Do not connect
4	Do not connect	Tx Data+ (Out)
5	Ground	Ground
6	Do not connect	Vcc
7	RTS (Out)	Do not connect
8	CTS (In)	Do not connect
9	Do not connect	Tx Data – (Out)

Plug-in Memory Card

Type	Standard SD Memory Card (24mm x 32mm x 1.4mm)
Storage Capacity	SD Memory Card dependent: Up to 2Gb supported
Card Format	PC Compatible FAT File Format

Data Format	Data writable by program to suit application. Any text based file format may be written such as CSV File Format compatible with Microsoft Excel etc.

Network Communications Specifications for the Conet port

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.
Cable length	10km maximum
No of nodes	126 max on one network

Ordering Information

ORDER CODE	PRODUCT	DESCRIPTION
C2360B-21 – 0	Teleterm M2C	Teleterm M2C Programmable RTU equipped with CONET network port.

ACCESSORIES

C6169	Conet Terminator Board	
M1831A	MX Programming Cable	RS232 Male DB9 connector (PC end) to FC11 (Target end) 2 metres.
M1832A	Conet Patch Cable	Male DB9 connector (CPU end) to loose ends. 2 metres. Use to connect M2C to C6169 Conet Terminator.
M1833A	MX RS232/485 Serial Patch Cable	RS232/485 Female DB9 connector (M2 end) to loose ends. 2 metres.