TELETERM M2 Series Programmable RTU's

Model C2360C-0 and C2361C-0 Teleterm RTU's

DATASHEET

- 12 Configurable Inputs and Outputs
- 10/100 Ethernet port on C2361C-0
- ISaGRAF 61131-3 Programmable
- micro-SD Card Logging
- Low power operation
- Two serial ports (incl. RS485)

FEATURES

- **Low Power operation**
- **12 Inputs and/or Outputs (Analog or Digital)**
- **9 - 30V dc powered.**
- **uSD 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 M2 is a state-of-the-art RTU designed to expand the possibilities of remote monitoring and control by providing a cost effective platform with a wide range of features.

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

Teleterm M2 can also be programmed in ISaGraf (selectable option), an industry standard programming environment for all five IEC61131-3 programming languages, providing the ability to do local control, and custom logic.

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

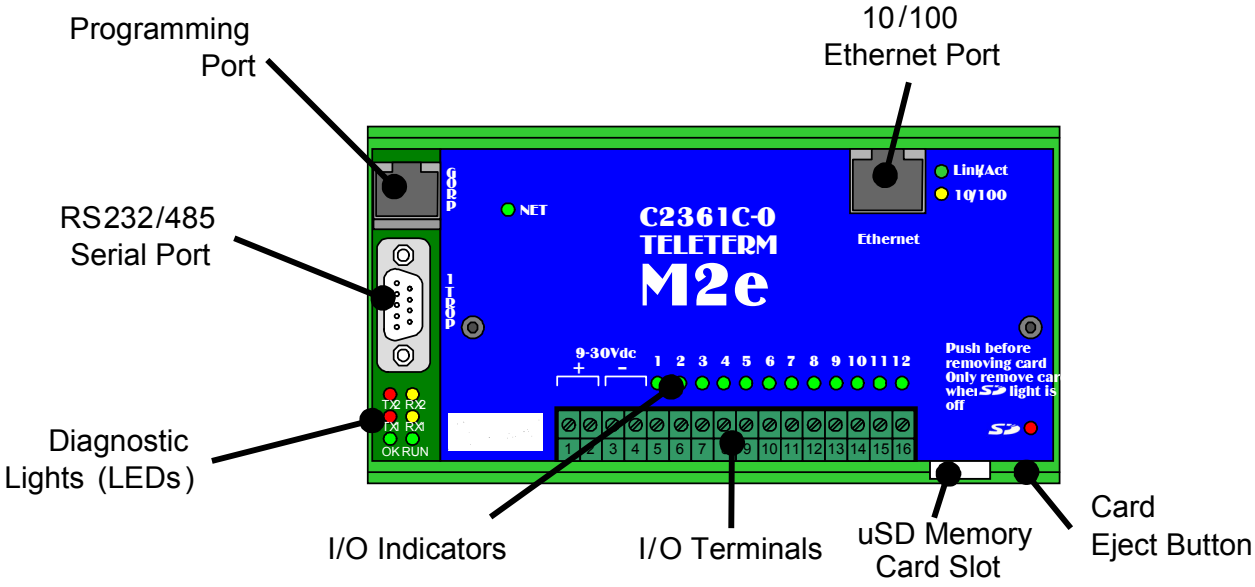
The Teleterm M2e C2361C-0 is also equipped with 10/100 Ethernet port.

Typical applications for the M2 and M2e include:

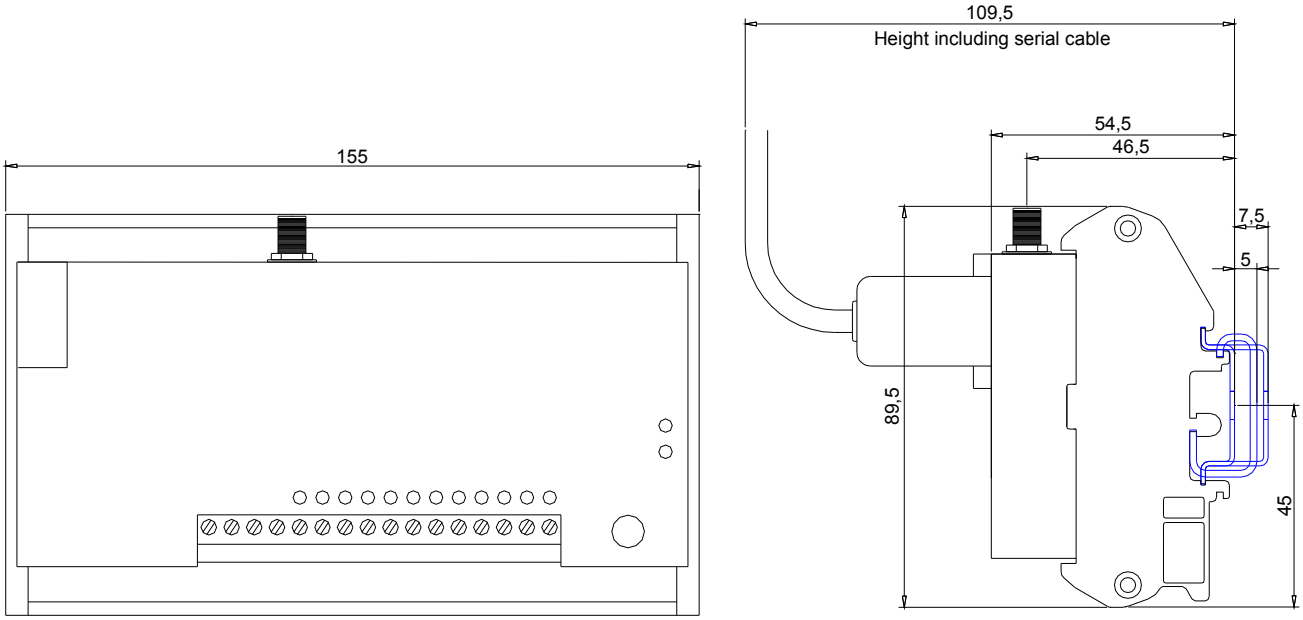
- Energy Management and Remote Meter Reading.
- Environmental Monitoring
- Remote Site Monitoring
- Utilities monitoring
- Pump Stop and Start Control
- Reservoir Pump Integrated Control
- Message Board Ethernet Connection from Plant

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

General Layout



Mechanical Dimensions



Communication Functions by Model

Product Name	Order Code	Notes	12 I/O	RS232/ RS485 Port	Ethernet Port	ISAGRAF Programming
M2	C2360C-0-0		☑	☑		
M2	C2360C-0-1	1	☑	☑		☑
M2e	C2361C-0-0		☑	☑	☑	
M2e	C2361C-0-1	1	☑	☑	☑	☑

NOTES:

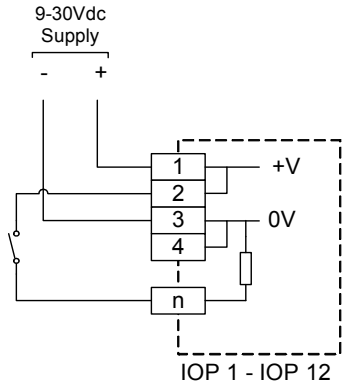
1. ISAGRAF available with software license. Contact Omniflex office for details.

Input/Output Configurable Options

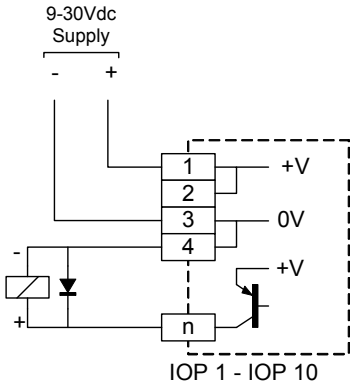
The M2 and M2e are equipped with 12 versatile input/output points (I/O points or IOP's). Each I/O point can be individually configured from the options given in the following table:

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

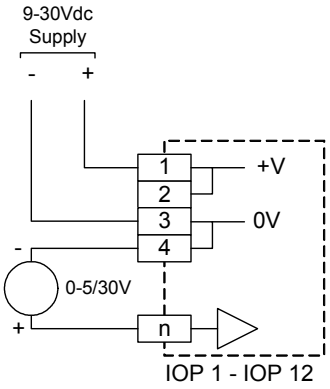
***Note 1**: See the "Specifications" section of this document for detailed specifications of each I/O point option.*
***Note 2**: All 0-30V analogue inputs have increased resolution over the range 0-6V (equivalent to the 0-5V inputs).*
***Note 3**: All Digital Inputs can be configured as Pulse Counters or Hours Counter.*
***Note 4**: All Digital Outputs can be configured as Pulse outputs (normally ON or normally OFF).*



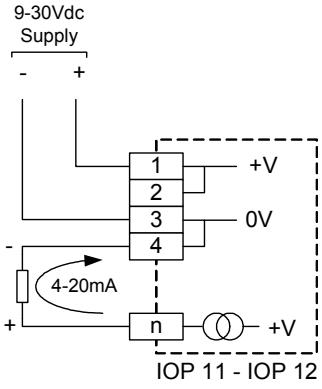
DIGITAL INPUTS



DIGITAL OUTPUTS



ANALOGUE INPUTS



ANALOGUE OUTPUTS

SPECIFICATIONS

Input/Outputs

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	2mV from 0 to 5.5 Volts nominal (12 bits) 33mV from 5.5 to 30Volts nominal

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	< 0.15% of reading +3mV
Resolution	2mV nominal (12 bits)

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

Type	4-20mA Source into 0V connected load
Load	1k maximum load
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 32 Bit Processor
Clock Speed	72MHz
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 CR1220

Compliance with Standards

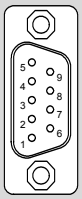
Safety	EN 60950
Emissions	EN 55011, Group I, Class A
Immunity – ESD	IEC 61000-4-2:2001, level 3
Immunity – RF Fields	IEC 61000-4-3:2003, level 3
Immunity – Fast Transients	IEC 61000-4-4:2004 2 kV – DC power port 1 kV – input/output lines

Weight

Packed/Unpacked	350gm/250gm approx.

Front Panel Serial Port (available on all models)

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 (available on all models)

Type	Micro SD Memory Card (11mm x 15mm)
Storage Capacity	Memory Card dependent: Up to 4Gb 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 Teleterm M2e Model C2361C-0

Link	ethernet
Speed	10/100
Green LED	LINK/ACT
Yellow LED	10/100
Cable	CAT5 recommended

Ordering Information

ORDER CODE	PRODUCT	DESCRIPTION
C2360C – 0 – 0	Teleterm M2	Teleterm M2 Programmable RTU
C2360C – 0 – 1	Teleterm M2	Teleterm M2 Programmable RTU with ISAGRAF programming language
C2361C – 0 – 0	Teleterm M2e	Teleterm M2e Programmable RTU equipped with ethernet port
C2361C – 0 – 1	Teleterm M2e	Teleterm M2e Programmable RTU equipped with ethernet port and ISAGRAF programming language

ACCESSORIES

M1833A	MX RS232/485 Serial Patch Cable	RS232/485 Female DB9 connector (M2 end) to loose ends. 2 metres.