DATASHEET

- 5 Configurable Inputs and Outputs
- Wide choice of communications options
- ISaGRAF 61131-3 ready
  (order CC030A-URTT to activate)
- Integrated Solar Charger or 10-30Vdc
- SD Memory Card Logging
- Modbus support
- Very low power operation

Features

- **10 - 30V dc or direct solar powered.**
- **Low power consumption for battery applications**
- **5 Inputs and/or Outputs (Analogue or Digital)**
- **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 or surface mounting**

Overview

The TELETERM S3 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 for very low I/O count applications where power is limited.

Communications options include GSM/GPRS or EDGE/ HSPA UMTS, CDMA and, 900MHz licence free radio, and RS232 and RS485 serial.

The TELETERM S3 comes with 5 universal I/O that can be configured for analogue or digital input or output according to your needs.

The on board RS232/485 ports can be used to acquire data from other third party devices using 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 S3 makes it suitable for use in solar powered and battery powered applications. A solar regulator is built into the Teleterm S3.

The Teleterm S3 series can be programmed in the optional ISaGRAF, an industry standard programming environment for all five IEC61131-3 programming languages, providing the ability to do local control, and custom logic.

The Teleterm S3 also incorporates a microSD memory card slot to support local data logging.

Typical applications for the S3

- Remote Meter Reading.
- Environmental Monitoring
- Remote Valve Control
- Flow monitoring
- Reservoir Level Monitoring
- Irrigation Monitoring and Control
- Tank Level Monitoring

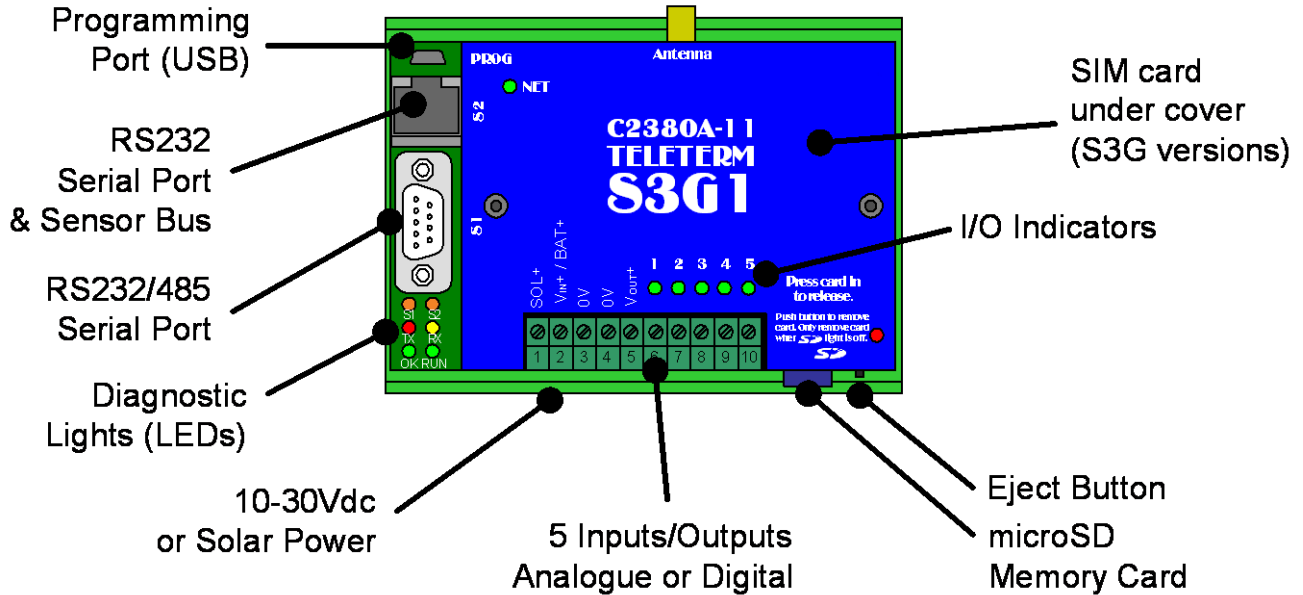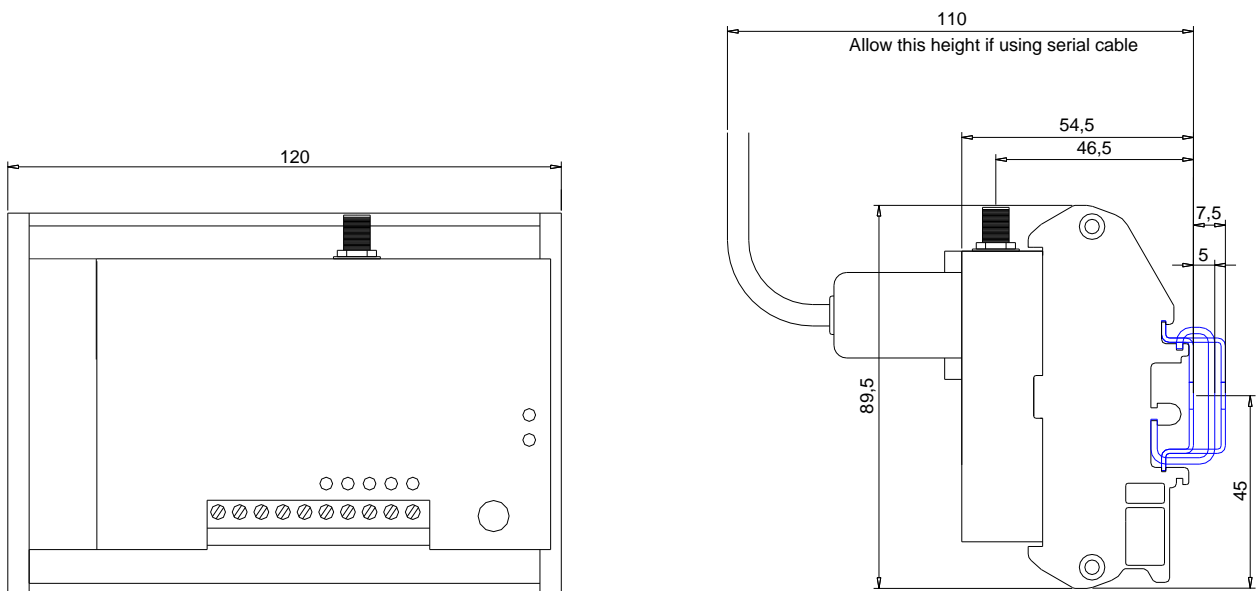Stay in touch – Take control with the Teleterm S3 Series from Omniflex.

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General Layout

Programming Port (USB)

RS232 Serial Port & Sensor Bus

RS232/485 Serial Port

Diagnostic Lights (LEDs)

10-30Vdc or Solar Power

5 Inputs/Outputs Analogue or Digital

SIM card under cover (S3G versions)

I/O Indicators

Eject Button

microSD Memory Card

PROG
NET
S2
S1

C2380A-11
TELETERM
S3G1

SOL+ Vin+ /BAT+ 0V 0V Vout+

1 2 3 4 5

S1 S2
TX RX
OK RUN

Antenna

Press card in to release.
Push button to remove card. Only remove card when SD light is off.

1 2 3 4 5 6 7 8 9 10

Mechanical Dimensions

120

110
Allow this height if using serial cable

54,5
46,5

7,5
5

89,5

45

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SGS

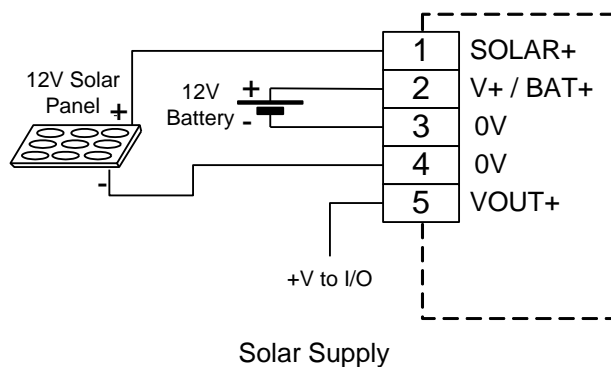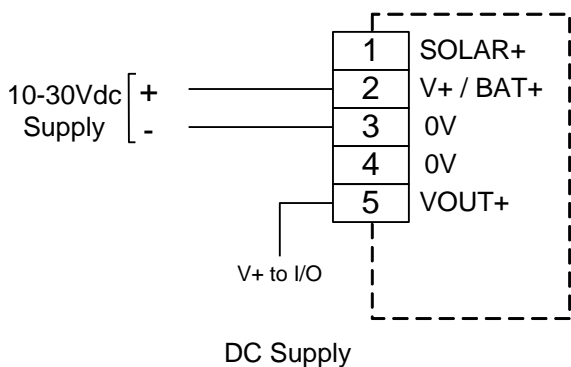## Communications Options by Model

Product Name	Order Code	Notes	5 I/O	RS232 + RS232/ RS485 Ports	GSM/ EGSM/ GPRS Port	3G UMTS Port	868MHz 315mW Radio Port	920MHz 1W Radio Port
S3	C2380C-0		✓	✓				
S3G1	C2380C-11	1	✓	✓	✓			
S3G2	C2380C-12	2	✓	✓		✓		
S3R4	C2380C-34	3	✓	✓				✓

NOTES:

1. The GSM/EGSM/GPRS port is a quad band interface operating on 900/1800/850/1900MHz. This is suitable for use on most countries' internationally compatible GSM networks. Consult the factory for specific compatibility with your network.

2. The UMTS/HSPA port is a penta band device operating on 850/900/950/1900/2100MHz. This interface is approved for use on GCF-CC, R&TTE (CE), FCC/IC, A-Tick, Telstra & NTT DoCoMo networks. It is also 3G HSPA compliant.

3. 920MHz Band is suitable for use in USA, Australia and New Zealand.

Power Supply Options

The S3 series is equipped with an internal solar regulator allowing direct connection of a solar panel and battery for solar applications, or 10-30Vdc for dc powered applications:

DC Supply

Solar Supply

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Input/Output Configuration Options

The S3 series is equipped with 4 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	6	Yes	0-30Vdc	Yes	-
2	7	Yes	0-30Vdc	Yes	-
3	8	Yes	0-30Vdc	Yes	-
4	9	Yes	0-6Vdc/0-25mA	Yes	-
5	10	Yes	0-30Vdc	Yes	0-25mA

Note 1: See the "Specifications" section of this document for detailed specifications of each I/O point option.
*Note 2: All Digital Inputs can be configured as Pulse Counters or Hours Counter.*
Note 3: All Digital Outputs can be configured as Pulse outputs (normally ON or normally OFF).
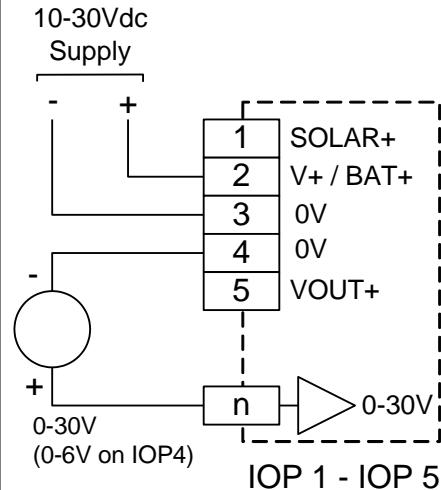*Note 4: The Analogue output has the capacity to drive 800 Ohm loads at 25mA over the entire range of supply voltage. This allows this output to be used as a 24Vdc power source for powering two wire transmitters even on 12V solar power.*
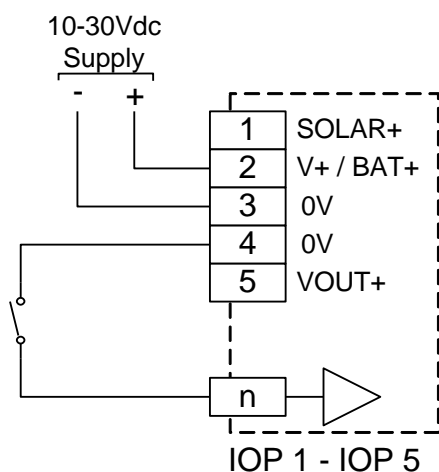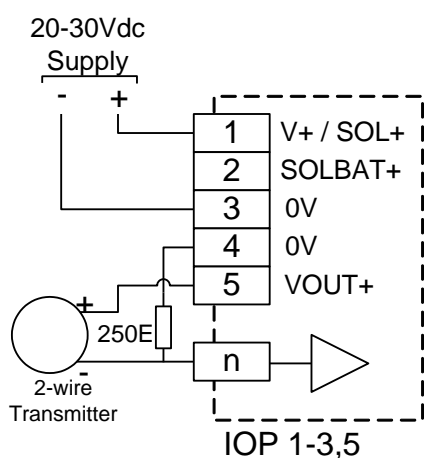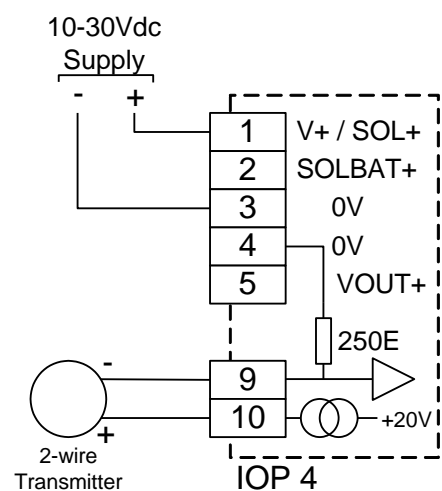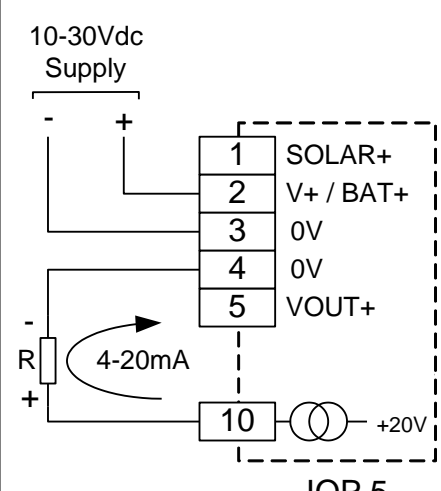
DIGITAL INPUTS
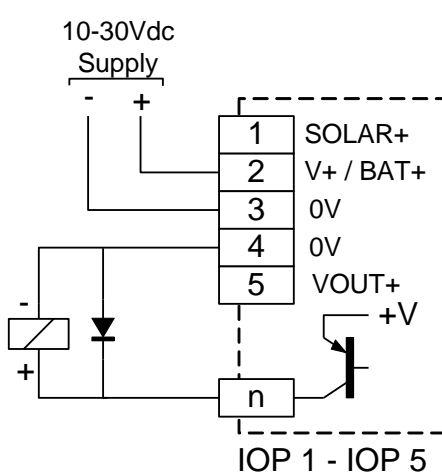
DIGITAL OUTPUTS

ANALOGUE INPUTS

2 WIRE TRANSMITTER INPUTS 1-3

2 WIRE TRANSMITTER INPUT 4

4-20mA OUTPUT

Specifications Common to all Models

Inputs / Outputs

All S3 RTU's have 5 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 5)

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 Status Counter Input (counts OFF to ON transitions at 50Hz max). Hours Input (counts hours while input is ON to resolution of 0.01 hours).

As a Digital Output (IO Points 1 to 5)

Type	Voltage Source (Solid State Switch to +V)
ON State Rated Current	< 100mA maximum per output < 500mA total for all outputs simultaneously
ON State Voltage	> (V_{supply} - 3V) at maximum rated load
OFF State 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 1-3,5)

Type	Voltage Input referenced to 0V supply.
Range	0-30Vdc maximum
Accuracy	< 0.1% of reading +10mV
A/D Resolution	7mV nominal (12 bits over 30Volts)
Digital Filtering	16 bit resolution enhanced low pass

As an Analogue Input (I/O Point 4)

Type	Voltage/Current Input referenced to 0V.
Range	0-6Vdc / 0-25mA maximum
Accuracy	< 0.1% of reading +2mV
A/D Resolution	2mV nominal (12 bits over 6Volts)
Input Termination	250 ohms (software selectable)
Digital Filtering	16 bit resolution enhanced low pass

As an Analogue Output (I/O Point 5)

Type	0-25mA Source into 0V connected load
Output Voltage	>20V over 0-25mA for any supply voltage
Maximum Load	800 ohms (20V at 25mA)
Minimum Load	0 Ohms
Current Range	0 to 25 mA (software configurable to smaller ranges such as 4-20mA or 0-1mA)
Accuracy	< 0.25% of full scale

General Specifications

Power Requirements

Power Supply Voltage	10 – 30Vdc (ripple < 5%)	
Average Current (Run Mode)	35mA at 12Vdc	18mA at 24Vdc
Average Current (Sleep Mode)	0.25mA over 9-30Vdc	

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"

Environmental Conditions

Storage Temperature	-25°C – 85 °C (-13°F – 185°F)
Operating Temperature	-10°C – 60 °C (+14°F – 140°F)
S3G Radio compliance	-10°C – 50 °C (+14°F – 122°F)

Mechanical

Mounting	DIN rail, G Rail Surface mount with kit C0010A
Dimensions	120 x 89.5 x 59.5 mm

Processor

Type	32 Bit ARM Processor
Clock Speed	72MHz (in RUN mode)
Memory – Flash / RAM	512kB / 512kB

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
Immunity – ESD	IEC 61000-4-2, level 3
Immunity – RF Fields	IEC 61000-4-3, level 3
Immunity – Fast Transients	IEC 61000-4-4 2 kV – DC power port 1 kV – input/output lines

Weight

Packed/Unpacked	350g/250g approx.
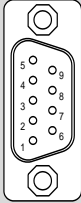
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Serial Port 1 – RS232/485 (available on all models)

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 "plugin"s 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)

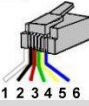## Serial Port 2 – RS232 (available on all models)

Type	Asynchronous serial port
Protocols	Supports the following protocols: • Conet/s • Modbus ASCII (Master or Slave) • Modbus RTU (Master or Slave) • Other protocols on request
Baud Rate	300 – 38,400 baud.
Maximum cable length	15 meters (50ft) in RS232 mode
Connector	RJ12

Pin	RS232 Connection
1	Rx Data to S3 (In)
2	Ground
3	Do not connect
4	Tx Data from S3 (Out)
5	Do not connect
6	Do not connect
7	Do not connect
8	Do not connect

Plug-in Memory Card (available on all models)

Type	micro SD Memory Card (15mm x 11mm x 1.0mm)
Storage Capacity	SD Memory Card dependent: Up to 2Gb supported
Card Format	PC Compatible FAT File Format

Data Format	Data writable by user 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 S3G1   Model C2380C-11 (EGSM/GPRS)

Network Port

Type	GSM/GPRS mobile network

GSM/GPRS Connectivity

GSM Capability	Quad Band EGSM/GPRS (900/1800/850/1900MHz) 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
SIM Card	Small (3Volt only)
Antenna	Remote mounted antenna connected via SMA connector on S3G.

SMS

Transmission Method	SMS's can be sent by the user program in the S3G1.
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 UDP/IP packets or TCP/IP session data to third party applications. This is an advanced function, only recommended to experienced programmers.

Data2Desktop Service Compatibility

Secure Access to data from the S3G1 is made possible from a standard Web Browser using the Omniflex "Data2Desktop" 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 S3G1 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).

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Network Communications Specifications for the Teleterm S3G2   Model C2380C-12 (HSDPA/UMTS)

Network Port

Type	HSDPA (UMTS) mobile network
Network Bands	850/900/1800/1900 MHz GSM/GPRS/EDGE 800/850/900/1900/2100 MHz UMTS/HSPA (WCDMA/FDD) (3G HSPA compliant.)
Approvals	GCF-CC, PTCRB-Planned, R&TTE(CE), FCC/IC, A-Tick, JPA-Planned, Telstra, NTT DoCoMo, AT&T-Planned
Antenna	Remote mounted antenna connected via SMA connector on S3G2.

SMS

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

Data2Desktop Service Compatibility

Secure Access to data from the S3G2 is made possible from a standard Web Browser using the Omniflex "Data2Desktop" Web Service. This service is available by monthly subscription. (D2D software pack required to be installed on S3G2)

Network Communications Specifications for the Teleterm S3R4   Module C2380C-34 (920MHz 1W)

Operating Band	915-928 MHz	Throughput Data Rate	9,600 bps / 128kbps (selectable)
Special Radio Licence Requirements	None. (operates in licence-free ISM band)	Number of Channels	10 Frequency Hopping Sequences
Transmit Power	Settable 1mW (0dBm) to 1W(+30dBm)	Outdoor Range (Line of Sight)	Up to 10 km with dipole Up to 30 km with hi-gain antenna
Receiver Sensitivity	-110dBm typical	Antenna	RPSMA Connector for external antenna
Modulation	FHSS FSK	Approvals	Approved for use in USA and Australia

Ordering Information

ORDER CODE	PRODUCT	DESCRIPTION
C2380C-0	Teleterm S3*	Teleterm S3 Programmable RTU
C2380C -11	Teleterm S3G1*	Teleterm S3G1 Programmable RTU with GSM/GPRS internal modem.
C2380C -12	Teleterm S3G2*	Teleterm S3G2 Programmable RTU with GSM/GPRS/EDGE/HSPA internal modem (3G HSPA compliant)
C2380C -34	Teleterm S3R4*	Teleterm S3R4 Programmable RTU equipped with internal 920MHz 1W FHSS licence-free radio network port (USA, Australia, NZ only)
CC030A-URTT	ISaGRAF Initiation	*Order to activate ISaGRAF programming which conforms to IEC61131-3

Accessories

M1831B	MX Programming Cable	RS232 Male DB9 connector (PC end) to FC11 (Target end) 2 metres.
M1833A	MX RS232/485 Serial Patch Cable	RS232/485 Female DB9 connector (S3 end) to loose ends. 2 metres.

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