- 5 Configurable Inputs and Outputs

- Wide choice of communications options

- ISaGRAF 61131-3 ready
  (order CC030A-URTT to activate)

- Integrated Solar or 10-30Vdc Power

- 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 (Remote Terminal Unit) 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.

Communication

Communications options include GSM/GPRS or EDGE/HSPA UMTS, 4G, CDMA and, 868MHz and 900MHz licence free radio bands, and RS232 and RS485 serial ports.

Inputs

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

Built in RS232/485 port

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.

Low Power Consumption

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.

Programming

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.

Built-in Data Logging

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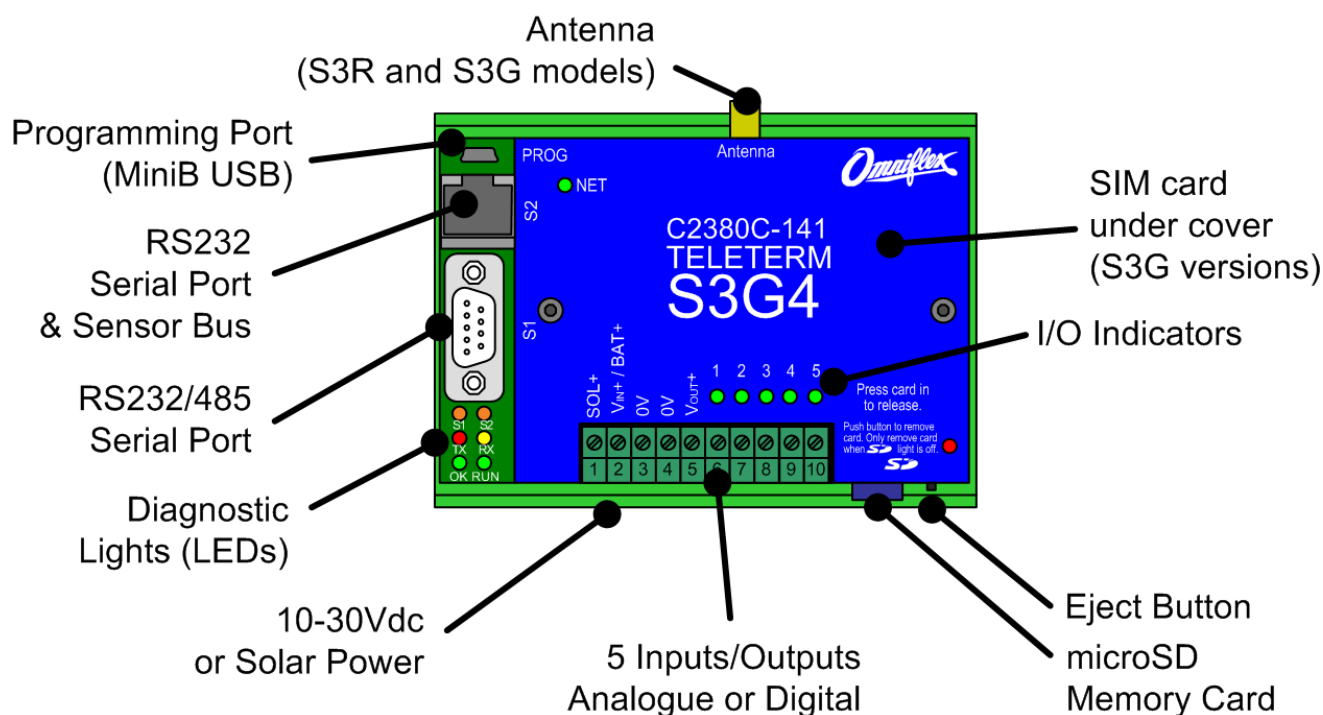
Typical Applications

Typical Applications for the S3 include:

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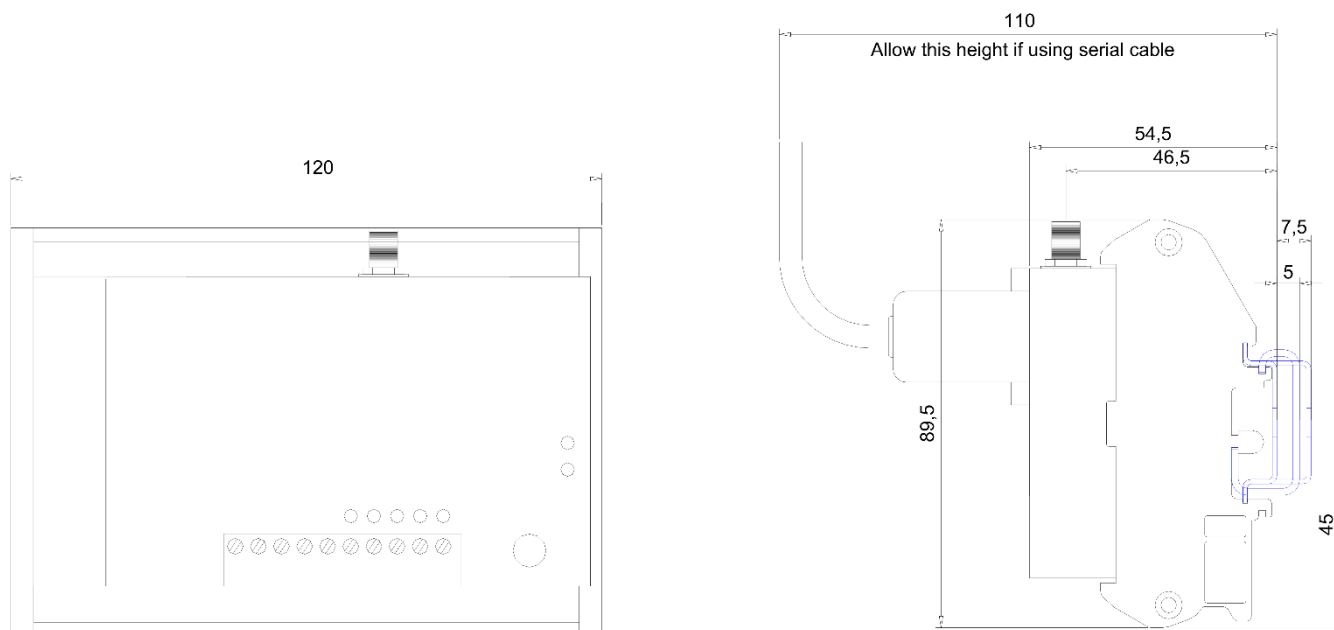- Tank Level Monitoring

General Layout

Antenna
(S3R and S3G models)

Programming Port
(MiniB 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
Antenna
Omniflex
C2380C-141
TELETERM
S3G4
S1
SOL+
V_{IN+} / BAT+
0V
0V
V_{OUT+}
1 2 3 4 5
Press card in
to release.
Push button to remove
card. Only remove card
when SD light is off.
SD
S1 S2
TX RX
OK RUN
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

Communications Options by Model

Product Name	Order Code	Notes	5 I/O	RS232 + RS232/ RS485 Ports	4G/LTE CAT1 Port	5G Cat M1 /NB2	868MHz 500mW Radio Port	920MHz 1W Radio Port
S3	C2380C-0		✓	✓				
S3G4	C2380C-141	1,2	✓	✓	✓			
S3G4	C2380C-142	1,3	✓	✓	✓			
S3G5	C2380C-151	1,4	✓	✓		✓		
S3R4	C2380C-304	5,6	✓	✓				✓
S3R6	C2380C-306	5,7	✓	✓			✓	

NOTES:

1. The S3G version is available in several options to conform to different GSM based networks. Please ensure that the correct unit is specified for your application.
2. The 4G/LTE port is a CAT1 interface operating on bands B1/B3/B7/B8/B20 and B28A. This is suitable for use in UK, Europe, and South Africa. Consult the factory for specific compatibility with your region's network.
3. The 4G/LTE port is a CAT1 interface operating bands B1/B3/B5/B7 and B28. This is suitable for use in Australia and New Zealand. Consult the factory for specific compatibility with your region's network.
4. The 5G/LTE is a CAT1 interface operating on bands B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B25, B26, B28, B66, B71and B85. This is suitable for use in multiple regions. Consult the factory for specific compatibility with your region's network.
5. The S3R versions are available in several radio band options to comply with different country regulations. Please ensure that the correct unit is specified for your application.
6. 920MHz Band is suitable for use in USA, Australia, and New Zealand
7. 868MHz Band is suitable for use in Europe, and South Africa.

Power Supply 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:

DC Supply

Solar Supply
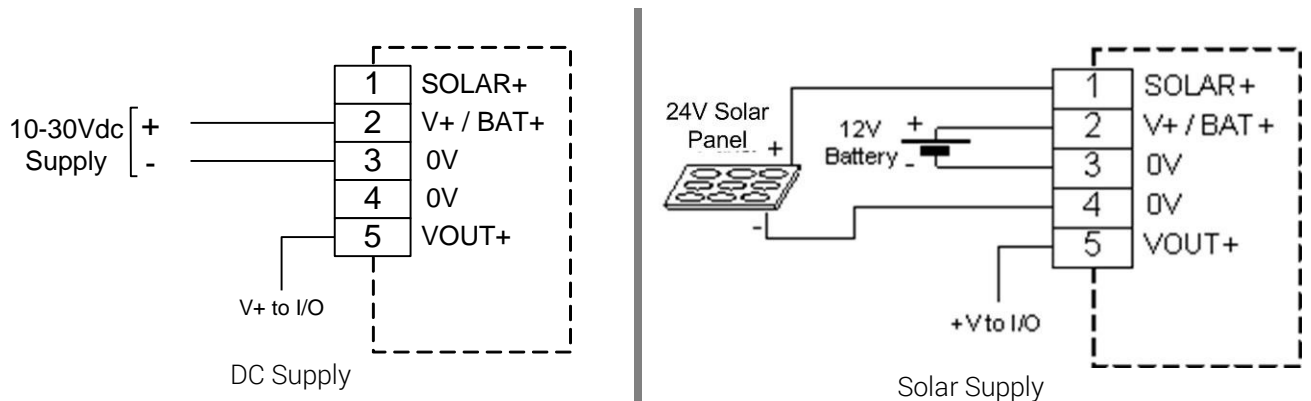
Input/Output Configurable Options

The S3 series is equipped with 5 versatile input/output points (I/O points or IOPs). Each I/O point can be individually configured from the options given in the following table
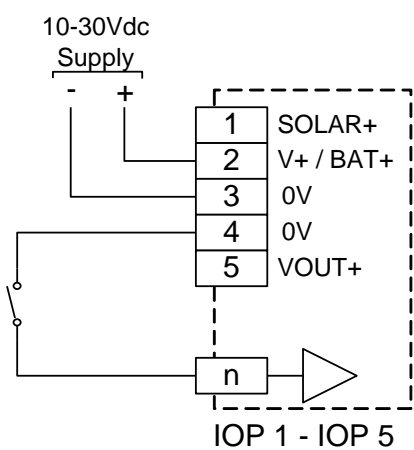
I/O Point	Terminal (n)umber	Digital Input	Analogue Input	Digital Output	Analogue Output
1	6	Yes	0-30Vdc	Yes	-
2	7	Yes	0-30Vdc	Yes	-
3	8	Yes	0-30Vdc	Yes	-
4	9	Yes	0-6Vdc/0-25mA	Yes	-
5	10	Yes	0-30Vdc	Yes	0-25mA

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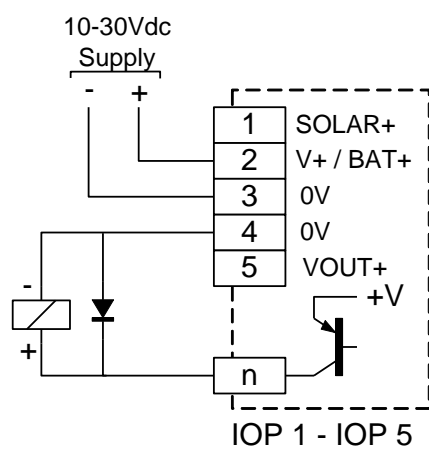*Note 2*: All Digital Inputs can be configured as Pulse Counters or Hours Counter.
Note 3: All Digital Outputs can be configured as Pulse outputs (normally ON or normally OFF).
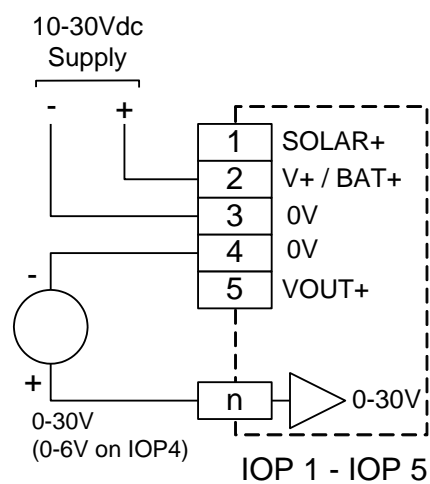*Note 4*: The Analogue output has the capacity to drive 800 Ohm loads at 25mA over the entire range of supply voltage. This allows this output to be used as a 24Vdc power source for powering two wire transmitters even on 12V solar power.

DIGITAL INPUTS — IOP 1 - IOP 5
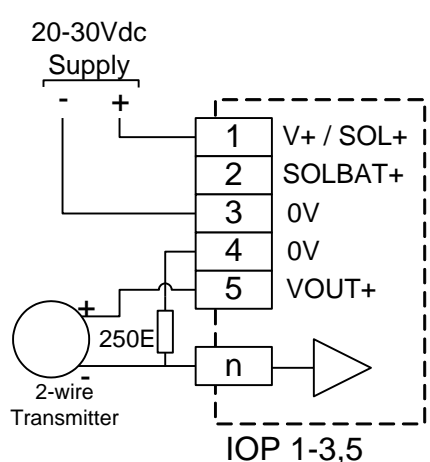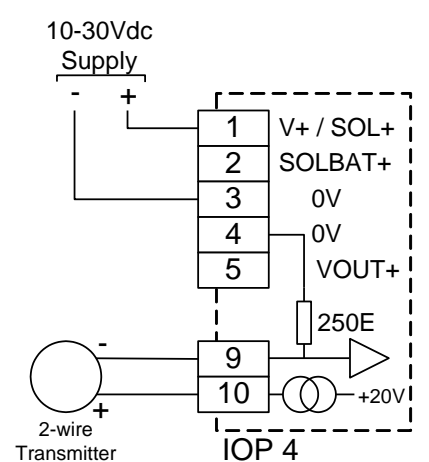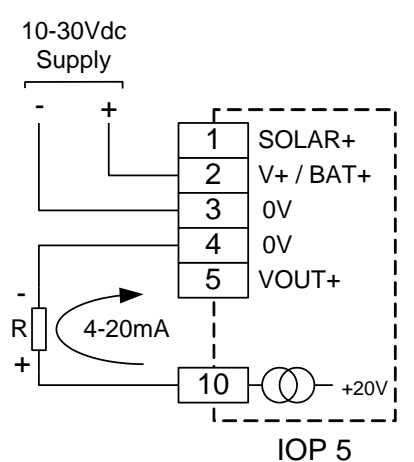
DIGITAL OUTPUTS — IOP 1 - IOP 5

ANALOG INPUTS — IOP 1 - IOP 5

2 WIRE TRANSMITTER INPUTS 1-3 — IOP 1-3,5

2 WIRE TRANSMITTER INPUT 4 — IOP 4

4-20mA OUTPUT — IOP 5

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Specifications

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 for 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

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Weight

Packed/Unpacked	350g/250g approximately

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.

Mobile Network Communication Specifications

Teleterm S3G4   Module C2380C-141 (LTE [EMEA])

Region/Operator	EMEA/Thailand
Type	LTE Cat 1 mobile network
Network Bands	LTE-FDD: B1/B3/B7/B8/B20/B28A WCDMA: B1/B8 GSM/EDGE: B3/B8
Regulatory Approvals	Global: GCF Europe: CE Taiwan (China): NCC Australia/New Zealand: RCM
SIM Card	3Volt Standard SIM
Antenna	External via SMA connector.

Teleterm S3G4   Module C2380C-142 (LTE [AUS/NZ])

Region/Operator	Latin America/Australia/New Zealand
Type	LTE Cat 1 mobile network
Network Bands	LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28 LTE-TDD: B40 WCDMA: B1/B2/B5/B8 GSM/EDGE: B2/B3/B5/
Regulatory Approvals	North America: FCC Canada: IC Brazil: Anatel Taiwan (China): NCC Japan: JATE/TELEC Australia/New Zealand: RCM
SIM Card	3Volt Standard SIM
Antenna	External via SMA connector.

Teleterm S3G4   Module C2380C-151 (LTE [MultiRegion])

Region/Operator	Multi-Region
Type	LTE Cat M1/NB2 mobile network
Network Bands	B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B25, B26, B28, B66, B71, B85
SIM Card	3Volt nano SIM
Approvals	FCC, ISED, GCF, PTCRB, Verizon, AT&T, US Cell, T-Mobile, Telus, Rogers 3, RED, Vodafone 3, Deutsche Telekom 3, KCC 3, SKT 3, Giteki, Softbank 3, KDDI 3, RCM, Telstra, ICASA 3, NCC
Antenna	External via SMA connector.

Radio Network Communications Specifications

Teleterm S3R4   Module C2380C-304 (920MHz 1W)

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

Teleterm S3R6   Module C2380C-306 (868MHz 500mW)

Operating Band	SRD g3 Band (869.525 MHz)
Special Radio Licence Requirements	None. (operates in licence-free ISM band)
Transmit Power	Settable 1mW (0dBm) to 500mW(+27dBm)
Receiver Sensitivity	-109dBm typical
Modulation	FSK
Throughput Data Rate	1200 bps to19200kbps (selectable), 10% duty cycle LBT (Listen Before Talk)
Number of Channels	Up to 10 channels (depending on baud rate)
Outdoor Range (Line of Sight)	Up to 20 km with dipole Up to 40 km with hi-gain antenna
Antenna	RPSMA Connector for external antenna
Approvals	Approved for use in Europe and South Africa

Ordering Information

ORDER CODE	PRODUCT	DESCRIPTION
C2380C-0	Teleterm S3#	Teleterm S3 Programmable RTU
C2380C -141	Teleterm S3G4#	Teleterm S3G4 Programmable RTU with GSM internal modem.4G (UK/EU/SA)
C2380C -142	Teleterm S3G4#	Teleterm S3G4 Programmable RTU with GSM internal modem (4G) AU/NZ
C2380C-151	Teleterm S3G5#	Teleterm S3G5 Programmable RTU with GSM internal modem LTE-M/NB2 Port
C2380C -304	Teleterm S3R4#	Teleterm S3R4 Programmable RTU equipped with internal 920MHz 1W FHSS licence-free radio network port (USA, Australia, NZ only)
C2380C-306	Teleterm S3R6#	Teleterm S3R6 Programmable RTU 868MHz 500mW (Europe, Middle East, Africa 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 (Used to convert Serial Port 2 to DB9).
M1833A	MX RS232/485 Serial Patch Cable	RS232/485 Female DB9 connector (S3 end) to loose ends. 2 metres.
M1838A	MX Prog Adapter	USB to MiniB Plug for Teleterm Range with MiniB Programming Port

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