![Dataplex logo]

Secure Network Access

DPX-529-02

SCATS® Remote Access Router

Overview

The **Dataplex DPX-529-02** is a compact, low cost, reliable , high-quality LAN/WAN router for SCATS® **ITS** industrial applications.

Optional Dual modem SIM for 4G LTE or 5G modem capability allows connectivity redundancy. Multiple networks can operate simultaneously. Redundancy can be supported via timeout and switchover or dual-homed IP paths. SFP slot facilitate connection to NBN* FTTP link.

- DPX-529-02 delivers high-speed wireless **4G LTE / 5G** with Wi-Fi and Bluetooth sensing (optional). Fast connectivity provides low latency and high performance for applications such as live streaming traffic flow, motorway CCTV cameras, etc.

- DPX-529-02 has the **DCE-9** connection and SCATS® serial protocol interface code, **SD card** configuration for console operation.

- The DPX-529-02 wireless 4G/5G router can be used by traffic signal controllers (**TSC**) for communication between SCATS® Regional Computer and the serial port of the TSC via Mobile broadband (4G/5G) and/or Optical Fibre **SFP** modules.

- The DPX-529-02 is designed to operate in accordance with (**TSI-SP-068**) TfNSW Specification.

- DPX-529-02 supports SCATS® **Serial to Ethernet** conversion.

- Supports (SCATS® driven) Extra Special Facility (**XSF**), Miscellaneous Status Signal (**MSS**) and Remote Special Facility (**RSF**) bits for such applications as Tidal Flow Systems, Sign and Power Fail alarms and controls (but not limited to).

DPX-529-02 at a glance

CONNECTIVITY

⇒ 4G/5G Mobile Broadband

⇒ (4 x SMA antennas)

⇒ SFP Fiber for NBN* FFT connectivity

Options:

⇒ Bluetooth for AddInsight ® Operation

⇒ WiFi

⇒ AI module for Ped & vehicle counting/classifying applications

INTERFACES

⇒ 2 x Ethernet WAN and LAN

⇒ 1 x Serial DCE-9 Male

⇒ 2 x SIM (Dual modem

⇒ capable)

⇒ 1 x USB-A 3.0 , USB-micro

⇒ consol

⇒ 1 x SFP Fiber (optional)

⇒ 8 in and 8 out GPI/0

MANAGEMENT

⇒ Web UI

⇒ Device provisioning software

LED ACTIVITY

⇒ SCATS® connection

⇒ SCATS® ID connection

⇒ Serial Tx/Rx

⇒ Mobile Broadband signal strength

⇒ 5/4G connection

⇒ SIM 1 and/or 2

OPERATING SYSTEM

⇒ Linux-based—OpenWRT

STORAGE

⇒ Memory up-to 2GB

⇒ 8GB eMMC (or MicroSD)

POWER

⇒ 12VDC (9-32VDC)

The DPX-529-02 wireless 4/5G router can be used by traffic signal controllers (TSC) for communication between SCATS® Regional Computer and the serial port of the TSC via Mobile broadband (4G/5G) and/or Optical Fibre SFP modules.

* Future Development - Ethernet TSC connection can be directly connected and SCATS® protocol can be monitored for SCATS® ID and Authentication servers in use which could be relayed to SNMP, SCATS® or other monitoring systems.

Features

⇨ 4G/5G dual (modem) SIM capable operation with optional dual SIM cards.

⇨ 1 x SFP 2.5GbE (optional) for Fibre modules e.g., NBN* FTTP (Fibre) GPON interface or OT Fibre network

⇨ 1 x SD card for configuration and storage.

⇨ 2 x Gigabit Ethernet LAN/WAN ports

⇨ 8in/8out opto-isolated I/0 12V source plus 1 Relay Output.

⇨ A dedicated 1 x TIA-232 DCE-9 male for serial connections.

⇨ 1 x 3.0 USB-A (compatible with serial converters) and 1x USB-micro (console)

⇨ 4G/5G wireless can provide backup to NBN* FTTP or OT Fibre network communications.

⇨ Indication LEDs: Mobile Broadband signal strength, SCATS® status indication, and RS-232 activity.

⇨ Optional (future development) Wi-Fi/Bluetooth (AddInsight® compatible) module for traffic monitoring.

⇨ DPX-529-02 offers serial Traffic Signal Controller (TSC) SCATS® communications.

⇨ CLI console interface via OpenWRT

⇨ Intelligent network monitoring allows DPX-529-02 to re-connect automatically or failover to an alternative path. SNMP v3 supported.

⇨ Device provisioning software , Web UI configuration management, and application deployment functionality (in development).

⇨ Supports (SCATS® driven) Extra Special Facility (XSF), Miscellaneous Status Signal (MSS) and Remote Special Facility (RSF) bits for such applications as Tidal Flow Systems, Sign and Power Fail alarms and controls (but not limited to).

Cellular Frequencies

Quectel RM520N 3GPP Release 16 Multi-constellation GNSS receiver (optional) 5G/4G/3G multi-mode, Both NSA and SA modes supported Frequency Bands
5G NR
NSA
n1/ 2/ 3/ 5/ 7/ 8/ 12/ 13/ 14/ 18/ 20/ 25/ 26/ 28/ 29/ 30/ 38/ 40/ 41/48/ 66/ 70/ 71/ 75/ 76/ 77/ 78/ 79
n1/ 3/ 5/ 7/ 8/ 20/ 28/ 38/ 40/ 41/ 71/ 75/ 76/ 77/ 78
SA
n1/ 2/ 3/ 5/ 7/ 8/ 12/ 13/ 14/ 18/ 20/ 25/ 26/ 28/ 29/ 30/ 38/ 40/ 41/48/ 66/ 70/ 71/ 75/ 76/ 77/ 78/ 79
n1/ 3/ 5/ 7/ 8/ 20/ 28/ 38/ 40/ 41/ 71/ 75/ 76/ 77/ 78
LTE
LTE-FDD
B1/ 2/ 3/ 4/ 5/ 7/ 8/ 12/ 13/ 14/ 17/ 18/ 19/ 20/ 25/ 26/ 28/ 29/ 30/ 32/66/ 71
B1/ 3/ 5/ 7/ 8/ 20/ 28/ 32/ 71
LTE-TDD B34/ 38/ 39/ 40/ 41/ 42/ 43/ 48 B38/ 40/ 41/ 42/ 43
LAA B46 - UMTS WCDMA B1/ 2/ 4/ 5/ 8/ 19 B1/ 5/ 8 GNSS GPS/ GLONASS/ BDS/ Galileo/ QZSS GPS/ GLONASS/ BDS/ Galileo/ QZSS

Certifications (Regulatory)

GCF/ PTCRB/ CE/ Anatel*/ CCC/ RCM/ IC/ FCC/ JATE*/ TELEC*/ KC*/ NCC* CE*/RCM*
Carrier

T-Mobile/ Verizon*/ AT&T*/ NTT DOCOMO*/ Deutsche Telekom*/Telstra* Data Rate (Max.) ②
⇨ 5G SA Sub-6 DL 2.4 Gbps; UL 900 Mbps DL 2.4 Gbps; UL 900 Mbps
⇨ 5G NSA Sub-6 DL 3.4 Gbps; UL 550 Mbps DL 3.4 Gbps; UL 550 Mbps
⇨ LTE DL 1.6 Gbps; UL 200 Mbps DL 1.6 Gbps; UL 200 Mbps
⇨ WCDMA DL 42 Mbps; UL 5.76 Mbps DL 42 Mbps; UL 5.76 Mbps
⇨ Antenna: 4 x (Sub-6/GNSS) 1 x GNSS (optional)

Quectel RM255C (OPTION) pre-release commercial samples Sept/Oct 2024 (commercial release estimated Jan 2025) 3GPP Release 17 **RedCap** (reduced capacity)
5G SA modes - 4G fallback
5G SA: n1/2/3/5/7/8/12/13/14/18/20/25/26/28/30/38/40/41/48/66/70/71/77/78/79; LTE-FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/30/66/71;
LTE-TDD: B34/38/39/40/41/42/43/48

Antenna: 2 x Cellular, 2 x GNSS (optional)

INTERFACES (PORTS, LEDS, ANTENNAS, BUTTONS, SIM)

ETHERNET   1 x Gigabit RJ45 WAN port (can be configured as LAN) 10/100/1000 Mbps, compliance with IEEE 802.3, IEEE 802.3u, 802.3az
standards, supports auto MDI/MDIX crossover.
1 x Gigabit RJ45 LAN port, 10/100/1000 Mbps, supports auto MDI/MDIX crossover

SERIAL   A dedicated 1 x TIA-232 DCE-9 male for serial connections, also connection to SCATS® based TSC

USB   1 x USB-A 3.0 & 1x USB-micro (console)

SFP   1 x SFP 2.5GbE (optional) for Fibre modules e.g., NBN* FTTP (Fibre) GPON interface or OT Fibre network

GPI/0   8in/8out opto-isolated I/0 12V source plus 1 Relay Output. Events: Programmable Input to single or multiple Output activation, Remote Messaging

SIM   2 x SIM (standard SIM card size) supports 2 x Mobile broadband modems or 2 x SIMs to 1 modem for redundancy.

SD   1 x SD card for configuration and storage

LEDs   SCATS® connection, SCATS® ID connection, Serial Tx/Rx, Mobile Broadband signal strength, 5/4G connection & SIM 1 and/or 2

NETWORK

Network protocols   TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, SMTP, SSL, TLS, PPP, PPPoE, SSH, DHCP, SNMP,

Routing   Static routing, Dynamic routing (BGP, OSPF v2, RIP v1/v2, EIGRP)

Connectivity   DHCP, Ping Reboot, Wget Reboot, Periodic Reboot, LCP and ICMP,

Firewall   Port forwards, traffic rules, custom rules,

SECURITY

Authentication   Pre-shared key & digital certificates

Firewall   Pre-configured firewall rules can be enabled via the WebUI, unlimited firewall configuration via CLI; NAT

VLAN   Port and tag-based VLAN separation

WEB filter   Blacklist for blocking out unwanted websites, Whitelist for specifying allowed sites only

Access control   Flexible access control of TCP, UDP, ICMP packets, MAC address filter

VPN

OpenVPN Encryption   Multiple clients and a server can run simultaneously

WireGuard   WireGuard VPN client and server support

IPSec   wide range of encryption protocols

MONITORING & MANAGEMENT

WEB UI   HTTP/HTTPS, status, configuration, FW update, CLI, troubleshooting, event log, system log, kernel log

FOTA   Firmware update from server, automatic notification, backup of configuration

SSH   SSH (v1, v2)

SNMP   SNMP (v1, v2, v3), SNMP trap

JSON-RPC   Management API over HTTP/HTTPS

LOG   SYSLOG local or remote

AddInsight Bluetooth   **Q4 2025** Using additional serial to Bluetooth converter via USB-A can be supported (version 1 and version2 -TLS based)

POWER

Power supply   9V DC to 32 V DC Standard 12 V DC/1.0A AC adapter

Power consumption   idle: 600 mA @ +12 V DC, Operation: 800 mA* +12 V DC *(*depending on Quectel module installed)*

PHYSICAL

Dimensions   170mm x 85mm x 50mm (heat sink aluminum enclosure)

Weight   500 g (not including accessories)

OTHER

LEDs   Signal strength, Power, SCATS® connection and ID, 4 and 5G connection, SIM 1 & SIM 2 connection

Operating   -10°C to +70°C, Storage: -40°C to +85°C, Relative Humidity < 95% (non-condensing)

Warranty   1 Year warranty

Certifications   RCM *, CE , RoHS *(*RCM certification is pending)*

Package Contents   1 x DPX-529-02 router, 2 x 5G/4G antennas, 1 x power supply adapter , 1 x DIN rail bracket