



Astra Quasar

Technical User Manual



Astra Quasar Technical User Manual

Astra Quasar is the Astra Wireless devices family, is used for deployment of wireless Point-to-Point links in 4900 - 7100 MHz frequency range, with a maximal performance of up to 2.1 Gbps in 160 MHz band.

Astra Quasar family combines the wide network functionality of previous generations devices with cutting-edge development in the communication system performance.

About This Manual

This manual provides detailed technical information for the **Astra Quasar** families devices, including system specifications, installation, commissioning, maintenance and troubleshooting.

The document is intended to be used by qualified RF engineers/technicians and IT professionals. Qualified personnel should have skills and experience with:

- Outdoor/indoor radio equipment installation
- Outdoor wireless networks
- TCP/IP networking protocols
- Safety procedures and instructions for installing antenna equipment
- Professional manipulation with electrical equipment and accessories
- Safety procedures and instructions for working at height.

Important Notice

Legal Rights

© Copyright 2024 Astra Wireless. All rights reserved.

The information contained in this document is originated by, proprietary, confidential and owned by Astra Wireless. No part of this document should be disclosed, reproduced or distributed without the express written permission of Astra Wireless Ltd.

Astra Wireless Ltd. reserves the right to change the information contained in this document without prior notice. No part of this document may be considered as a part of any contract or warranty.

Statement of Conditions

Astra Wireless Ltd. shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance or use of this manual or equipment supplied with it.

Disclaimer

The software is sold on an "AS IS" basis. Astra Wireless, its affiliates or its licensors make no warranties, whatsoever, whether express or implied, with respect to the software and the accompanying documentation. Astra Wireless specifically disclaims all implied warranties of merchantability and fitness for a particular purpose and non-infringement with respect to the software. Units of product (including all the software) delivered to purchaser hereunder are not fault-tolerant and are not designed, manufactured or intended for use or resale in applications where the failure, malfunction or inaccuracy of products carries a risk of death or bodily injury or severe physical or environmental damage ("high risk activities"). High risk activities may include, but are not limited to, use as part of on-line control systems in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, life support machines, weapons systems or other applications representing a similar degree of potential hazard. Astra Wireless specifically disclaims any express or implied warranty of fitness for highrisk activities.

Indication of the countries

Astra Wireless equipment has no geographical limitations for selling and can be supplied to any country of the world.

Limitation of Liability

Astra Wireless shall not be liable to the purchaser or to any third party, for any loss of profits, loss of use, interruption of business or for any indirect, special, incidental, punitive or consequential damages of any kind, whether arising under breach of contract, tort (including negligence), strict liability or otherwise and whether based on this agreement or otherwise, even if advised of the possibility of such damages.

To the extent permitted by applicable law, in no event shall the liability for damages hereunder of Astra Wireless or its employees or agents exceed the purchase price paid for the product by purchaser, nor shall the aggregate liability for damages to all parties regarding any product exceed the purchase price paid for that product by that party (except in the case of a breach of a party's confidentiality obligations).

Disposal instructions



This symbol means that this product is subject to Waste of electrical and electronic equipment (WEEE) regulations. Do not dispose of your product with other regular/household waste. Instead, hand over your waste equipment to a designated collection point for recycling.

Introduction

Document structure

This document consists of the following chapters:

- Introduction - presents the information about this document's purpose and structure.
- Planning considerations - describes the principles of wireless system planning.
- Installation - describes the steps to be taken when installing the equipment at the installation sites and installation site requirements.
- Operation & Administration - presents the functionalities of the web interface, a simple and efficient way to monitor the device status, configure and maintain the equipment.
- Troubleshooting - describes the actions to be taken during occurred problems investigation.

Document marks

CAUTION All caution warnings are marked with a special warning sign. One should pay a great deal of attention to what is written in the Caution section.
NOTE All notes are marked with a special note sign. Notes usually contain useful comments or hints to the described section of the document.

CAUTION

All caution warnings are marked with a special warning sign. One should pay a great deal of attention to what is written in the Caution section.

NOTE

All notes are marked with a special note sign. Notes usually contain useful comments or hints to the described section of the document.

Key Features

Astra Quasar is a wireless point-to-point solution with an impressive maximal performance of up to 2,1 Gbps, a packet performance is up to 500 000 pps.

Astra Quasar operates in frequency range from 4900 MHz to 6060 MHz for QSR5, from 6000 MHz to 7100 MHz for QSR6 and supports the channel width 20, 40, 80, 160 MHz.

Radio

- **Automatic Modulation Control (AMC)** – modulation control algorithm selects the most appropriate modulation-coding scheme in order to maximize the link performance.
- **Automatic Repeat Request (ARQ)** – a technology which enables packet re-transmission in case of previous unsuccessful delivery, allows to achieve reliable connectivity even in highly congested spectrum.
- **Automatic Transmit Power Control (ATPC)** – a technology which allows to extend the life of devices and optimize energy consumption.
- **Automatic range detection** – the guard interval optimal for the actual distance is automatically determined.

Networking*

- MAC/IP filtering.
- RIPv2 / OSPFv2 /static routing.
- Tunneling (Ethernet-over-IP, IP-over-IP).
- L2/L3 Firewall.
- NAT (multipool, H.323-aware).
- DHCP client/server/relay.
- Stacked VLAN support (Q-in-Q) avoids the limitation in the number of available VLANs (4096), which can be useful for large networks. In addition, Q-in-Q allows you to organize L2 channels within a limited VLAN list, which is widely used in provider networks and on leased communication channels.

Quality of Service*

- 17 priority queues.
- IEEE 802.1p support.
- IP TOS / DiffServ support.
- Full voice support.
- Traffic limiting (absolute, relative, mixed).
- Traffic redirection.

Environment

- Operating temperature range -40 ... +60 °C, in arctic edition: -55 ... +60 °C.
- Dust and water protection in compliance with IP66/IP67.
- Wind load up to 160 kph - operation, 200 kph - survival.

Power

The device has following electrical parameters:

- Consumption is up to 20 W.
- Power options: 110-240 VAC~ @ 50/60 Hz, ±43..56 VDC.
- 802.3at support or proprietary passive PoE.
- AC/DC injector: IDU-CPE-G(24W) is included to the packing list.

*Pending

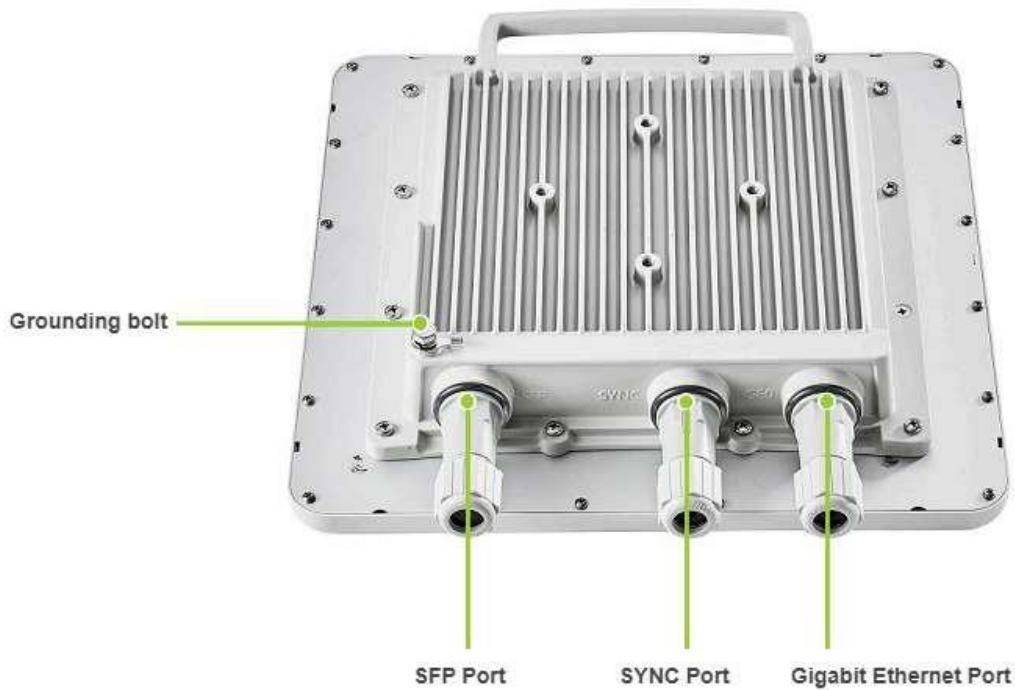
Hardware Platform

Wireless device

The wireless device contains both the radio and networking electronics. Implemented in a robust all-weather metal enclosure, this equipment can be used to create point-to-point wireless links at long distances. The wireless device is supplied in the following configurations:

- with removable integrated antenna 26 dBi (QSR5-26 / QSR6-26);
- with removable integrated antenna 29 dBi (QSR5-29 / QSR6-29);
- with two N-type ports for an external antenna (QSR5-E / QSR6-E).





The enclosure has three ports:

1x Combo port including:

- 1x Gigabit Ethernet port (10/100/1000 Base-T), RJ-45 connector: Data + Power.
- 1x SFP port: Data.

1x SYNC port - not used in this configuration.

Interface	Description
Gigabit Ethernet	RJ-45 socket for connecting to power supply and data transmission. The network connection to the wireless device is made via a 1000Base-T (Gigabit) Ethernet connection. Power is provided to the device over the 1000Base-T Ethernet connection using a standard IEEE 802.3at passive PoE power supply.
SFP	External optical Gigabit port 1000Base-X for plugging of the optical SFP transceiver module.

 NOTE

Power and wired statuses indication is performed via glassy plug of the cable gland.

State	Status	Description
Flash	Initialization	The LEDs on both ports light up with white on second. Then LEDs check is performed: red, blue, green are lightened up sequentially.
Flash	Loading	Only for Gigabit Ethernet port: at the beginning green is lightened a few seconds, on the second loading stage switches to blue.
ON/Blue	Power	Only for Gigabit Ethernet port.
ON/Green	Speed 1000 Mbps	
ON/Green	ERConsole stage	Port with the established link lights up with green, the second port remains blue
ON/Red	Speed 10 Mbps	Only for Gigabit Ethernet port.
ON/Yellow	Speed 100 Mbps	Only for Gigabit Ethernet port.



Power supply

Indoor AC/DC injector IDU-CPE-G(24W)



IDU-CPE-G(24W) is an indoor Gigabit PoE injector which supports 100-240 V input range from the AC mains. IDU-CPE-G(24W) feeds 48 VDC power to the device by injecting it to the CAT5 Ethernet cable.

Parameter	Description
Compatible models	Astra Quanta and Astra Evolution (except E5-BSQ), AUX-ODU-SYNC
Size and weight	97×53.5×33.5 mm, 0.133 kg
Connectors and Interfaces	<ul style="list-style-type: none"> "LAN" - Ethernet input (Data only) "POE" - Ethernet output (Data+VDC), PASSIVE PoE "PWR" - AC Input
Supported Ethernet Modes	10/100/1000 Mbps
Standards	<ul style="list-style-type: none"> IEEE 802.3 10Base-T IEEE 802.3U 100Base-TX IEEE 802.3ab 1000Base-T
Input Power Requirements	<ul style="list-style-type: none"> AC Input Voltage: 100 ... 240 VAC AC Input Current: 0.75 A AC Frequency: 50 to 60 Hz
Consumption	28 W
Operating temperature range	-10 °C ... +40 °C
Operating humidity	Maximum 95 %, Non-condensing
Storage temperature	-40 °C ... +70 °C
Output Power Voltage	48 VDC, 0.5 A
Safety	UL cUL, CE, GS, CCC, FCC, S-MARK, PSE, C-tick, KC(48V0.5A) BIS (24V1A)

Ethernet Connectors Pin-out

Pin	LAN	POE
1	A+	A+
2	A-	A-
3	B+	B+
4	C+	C+
5	C-	+VDC/ C-
6	B-	B-
7	D+	-VDC / D+
8	D-	-VDC / D-

Indoor DC/DC injector for all Astra Wireless' units with integrated lightning protection IDU-LA-G(V.01)

IDU-LA-G(V.01) is an indoor DC/DC injector. It greatly reduces complexity of the deployment in the cases where DC source is available thus reducing both capital expenditures and total cost of ownership.

IDU-LA-G(V.01) may be used for the following purposes:

- To serve as a line protection unit for indoor network equipment connected to the second Ethernet port on ODU.
- To connect third-party DC power sources to ODU (for example, to power the unit from solar power or wind power sources).

Technical parameters

Parameter	Description
Compatible models	Astra Quanta, Astra Evolution, Astra Quasar
Output Voltage	The same as input
Supported Ethernet Modes	10/100/1000 Mbps (Gigabit Ethernet pass-through)
Pin assignment and polarity	1/2 (+), 3/6 (-), 4/5 (+), 7/8 (-)
Size and Weight	115×65×40 mm, 0.15 kg
Operating temperature range	From 0°C to +40°C

 CAUTION

Exposing unit to the unsupported voltage will result in irreparable damage to the unit!
Always observe power requirements!

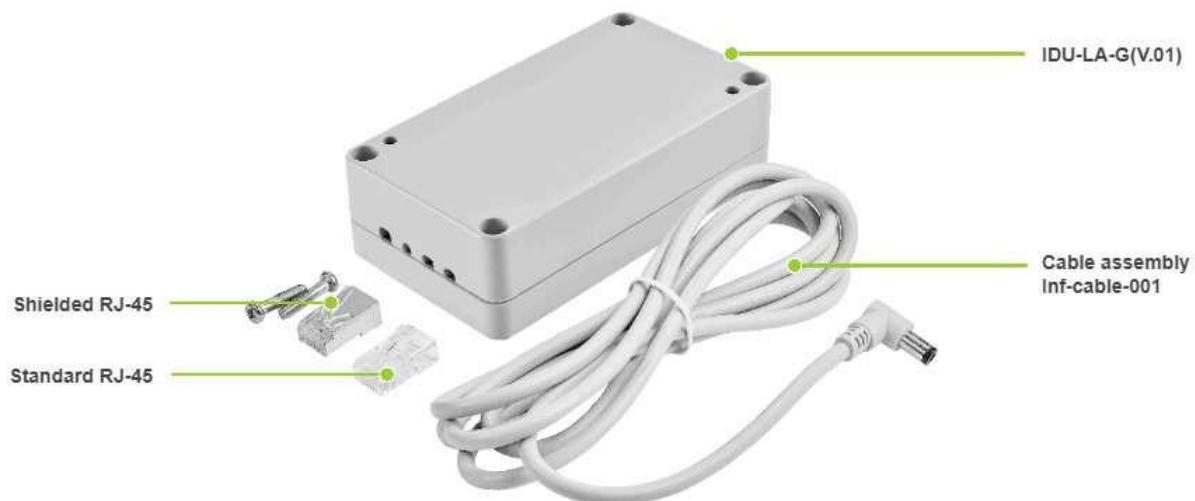
Connectors description



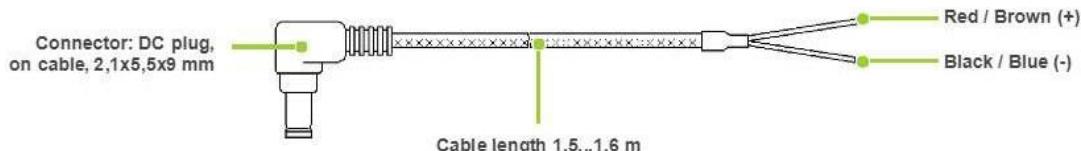
Mounting holes sizes



IDU-LA-G(V.01) Packing List



Cable assembly



Lightning Protection Unit with Injector AUX-ODU-INJ-G



Optional indoor/outdoor DC injector with built-in lightning protection. It greatly reduces complexity of the deployment in the cases where DC source is available on the rooftop eliminating the need of weather-sealed cabinets. AUX-ODU-INJ-G is compatible with all Astra Wireless devices.

Parameter	Description
Size and Weight	34×94×121 mm, 0.28 kg
Connectors and Interfaces	<ul style="list-style-type: none"> • ETH IN - Ethernet input • ETH OUT - Ethernet output (data+VDC, protected leg) • PWR - DC Input • GND - Ground clamp
Supported Ethernet Modes	10/100/1000 Mbps (Gigabit Ethernet pass-through)
Water and Dust Protection	IP66 and IP67
Operating temperature range	-55 °C ... +60 °C
DC Range	±43...±56 VDC
Lightning Protection	<p>In compliance with:</p> <ul style="list-style-type: none"> • GR-1089 • IEC 61000-4-2 (ESD) 15kV (air), 8kV (contact) • IEC 61000-4-4 (EFT) 40A (tp = 5/50ns) • IEC 61000-4-5 (Lightning) L5, 95A (tp = 8/20us) • ETSI ETS 300 386

 **CAUTION**

Using inappropriate DC source will damage the ODU, which will be not covered by warranty

Ethernet Connectors Pin-out

Pin	LAN	POE
1	Data pair A+	Data pair A+
2	Data pair A-	Data pair A-
3	Data pair B+	Data pair B+
4	Data pair C-	+VDC + Data pair C-
5	Data pair C+	+VDC + Data pair C+
6	Data pair B-	Data pair B-
7	Data pair D+	-VDC + Data pair D+
8	Data pair D-	-VDC + Data pair D-

Packing List



Block



Cable glands



Clamps

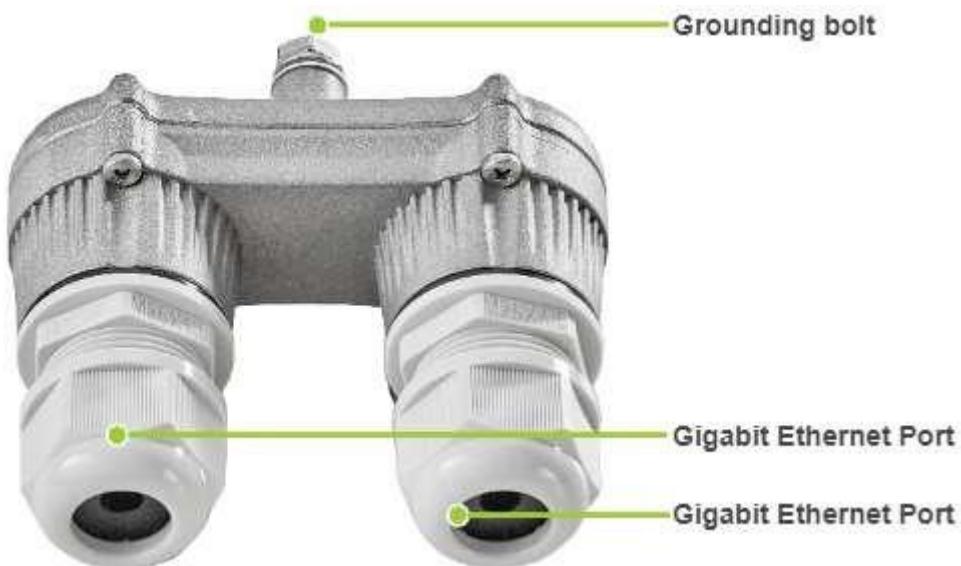


RJ-45 connectors

AUX-ODU-INJ-G is supplied with a worm clamp TORRO 40-60/9 C7 W4 DIN 3017 - 2 pcs. The clamp is made of stainless steel A4, width 9 mm, allows the installation on a mast with a diameter of 35 to 60 mm. In case of mast diameter more than 60 mm, a similar clamps (up to a 230 mm diameter) with a width of up to 12-13 mm can be used.

Lightning protection unit

AUX-ODU-LPU-L



AUX-ODU-LPU-L is a bidirectional external outdoor lightning protection unit for Astra Wireless systems designed to withstand the toughest conditions and protect the outdoor unit or the 3rd party networking equipment installed indoors from sudden power surges induced by lightning strikes. Despite the fact every Astra wireless device has a built-in lightning prote

ction. AUX-ODU-LPU-L, thanks to its superior GR-1089-grade protection, greatly reduces the risk of damage for the systems operating in harsh environments or difficult-to-reach locations. AUX-ODU-LPU-L is compatible with all Astra Wireless devices.

! NOTE

The device is not supplied by default and must be ordered separately.

Parameter	Description
Size and Weight	45×92×55.5 mm, 0.13 kg
Connectors and Interfaces	<ul style="list-style-type: none"> • 2 x Ethernet ports • Ground clamp
Supported Ethernet Modes	10/100/1000 Mbps (Gigabit Ethernet pass-through)
Water and Dust Protection	IP66 and IP67
Operating temperature range	-55 °C ... +60 °C
Opening voltage of the arrester	150 V
Lightning Protection	<p>In compliance with:</p> <ul style="list-style-type: none"> • GR-1089 • IEC 61000-4-2 (ESD) 15kV (air), 8kV (contact) • IEC 61000-4-4 (EFT) 40A (tp = 5/50ns) • IEC 61000-4-5 (Lightning) L5, 95A (tp = 8/20us) • ETSI ETS 300 386

Ethernet Pin-out

Pin	Data pair
1	A+
2	A-
3	B+
4	C-
5	C+
6	B-
7	D+
8	D-

Packing list



Block



Cable glands



Clamp



RJ-45 connectors

AUX-ODU-LPU-L is supplied with a worm clamp TORRO 40-60/9 C7 W4 DIN 3017. The clamp is made of stainless steel A4, width 9 mm, allows the installation on a mast with a diameter of 35 to 60 mm. In case of mast diameter more than 60 mm, a similar clamp (up to a 230 mm diameter) with a width of up to 12-13 mm can be used.

Packing List

Before the installation, please make sure you have all necessary parts and accessories.

- Outdoor unit (ODU).
- Power supply.
- Cable gland (x3).
- Shielded RJ-45 connector.
- Unshielded RJ-45 connector.
- Mounting kit - universal assembling kit for mounting the ODU on standard pole, wall or thick pipe (vertical/horizontal).
- Power cord - the model depends on the region, according to the Purchase Order.