



ION-M4/8 19" Operation Description

The ION-M7P/8P S is a fibre optic based RF repeater for wireless applications. A RF signal is converted to an optical signal by directly modulating a laser. There is no frequency conversion in this system.

The optical signal is converted back to RF at the ION-M remote unit, amplified and broadcast from an antenna or into a passive RF distribution system, such as radiating cable.

The RF gain in the system is maintained at a constant level throughout the system via AGC and the user does not need to adjust the gain of the system. The user would inject a RF signal to produce the appropriate RF output power from the ION-M remote unit. The receive path will always terminate in a RF source, such as a base station or repeater, and will not be directly connected to any antenna.

**PRODUCT
SPECIFICATION**



ION™-M7P/8P S

Multi-operator Remote Optical System

ION™ is the unified platform for all conceivable optical distribution scenarios.

The ION optical distribution system leads the industry in flexibility while minimizing the overall deployment cost.

Andrew ION-M7P/8P S is a multi-operator remote unit with various extension units. It is used in conjunction with a master unit in the ION optical distribution system. This system transports the entire 700 MHz public safety and 800 MHz LMR frequency bands simultaneously, providing a cost-efficient solution for distributing capacity from one or more base stations.

The ION-M7P/8P S transports signals on the RF layer in a very inexpensive manner. This means that multiple operators and multiple technologies are moved simultaneously from a cluster of

base stations to a remote location over the same fiber.

The ION optical distribution system is a cost-effective coverage solution for dense urban areas, tunnels, subway, airports, convention centers, high-rise buildings and other locations where physical structures increase path loss. It has been specifically designed to reduce zoning problems and to provide homogeneous coverage. The compact, mechanical design is specifically architected to mount at poles or along side structures in such a way that it has a minimum visual impact.

The ION-M7P/8P S performance is available both in single or multi-band configuration supporting 700 MHz, and 800 MHz in parallel. It has been specifically tested and optimized for TDMA, CDMA2000, and WCDMA. Furthermore it is provisioned for future improvements to modulations (e.g. HSPA, EV-DO and OFDM) and frequency bands. In addition it is backwards compatible to legacy standards such as Analog.

The ION is easily set-up and supervised via a graphical user interface (GUI). Remote units can be commissioned through the use of built-in test equipment. An auto leveling function

compensates for the optical link loss making installation easy and quick. The entire system may be monitored remotely via an Andrew OMC. This is a comprehensive management platform with SNMP protocol and X.733 standard implemented. Should a sophisticated interface not be required, the master unit can be directly connected to the alarm interface of a base station via relay alarming.

- Multi-band, multi-operator support
- Reduced visual impact form factor
- High, efficient power amplifier
- Single fiber for multiple bands and multiple remotes
- Comprehensive operations and management system for configuration and alarming
- OMC with SNMP according to X.733 standard
- Easy installation and commissioning
- Redundancy configuration option

ION-M7P/8P S - Product Specification

Electrical

Power Supply

Mains power, Vac	85 to 264 115 or 230
Power consumption, watts	550*

Optical

Connectors	E2000/APC 8°
Optical return loss, dB	45 minimum
Fiber type,mm	Single mode E9/125
Optical link budget, dB	0 to 10
Composite input power @ OTRx master side, dBm	
700 MHz	4.0 composite
800 MHz	4.0 composite

Interface

BTS Side

Number of connectors	
700 MHz	4
800 MHz	4
System optimized for BTS power, dBm	33 43
Antenna Port	
Connector	N Female
Output power	See band specification
Return loss, dB	15

700 MHz

Frequency range, MHz	
Uplink	778 to 806
Downlink	763 to 775
Output power per carrier**, dBm	
Number of Carriers	1 2 4 8
Analog	44 41 38 35
TDMA/EDGE	44 41 38 35
CDMA/EV-DO	44 41 38 35
WCDMA/HSPA	43 40 37 34
Spurious emission	<-13 dBm / 1 MHz
DL output tolerance over frequency, dB	±1
DL output tolerance over temperature, dB	±0.5***
Input ICP3, dBm	
ICP3 optimized	-11
Noise figure optimized	-18
Noise figure, dB	
ICP3 optimized	10
Noise figure optimized	6

800 MHz

Frequency range, MHz	
Uplink	806 to 824
Downlink	851 to 869
Output power per carrier**, dBm	
Number of Carriers	1 2 4 8
Analog	44 41 38 35
TDMA/EDGE	44 41 38 35
CDMA/EV-DO	44 41 38 35
WCDMA/HSPA	43 40 37 34
Spurious emission	<-13 dBm / 1 MHz
DL output tolerance over frequency, dB	±1
DL output tolerance over temperature, dB	±0.5***
Input ICP3, dBm	
ICP3 optimized	-11
Noise figure optimized	-18
Noise figure, dB	
ICP3 optimized	10
Noise figure optimized	6

System Supervision and Control

Commands	RF on/off External control ports
Alarms	Summary Power supply Optical UL and DL failure Temperature
Supervision	Composite output power Power detector for transmit power with configurable alarm levels (Optional)

Mechanical

Height, width, depth, mm (in)	546 x 320 x 310 (21.5 x 12.6 x 12.2)
Weight, kg (lb)	28 (61.5)

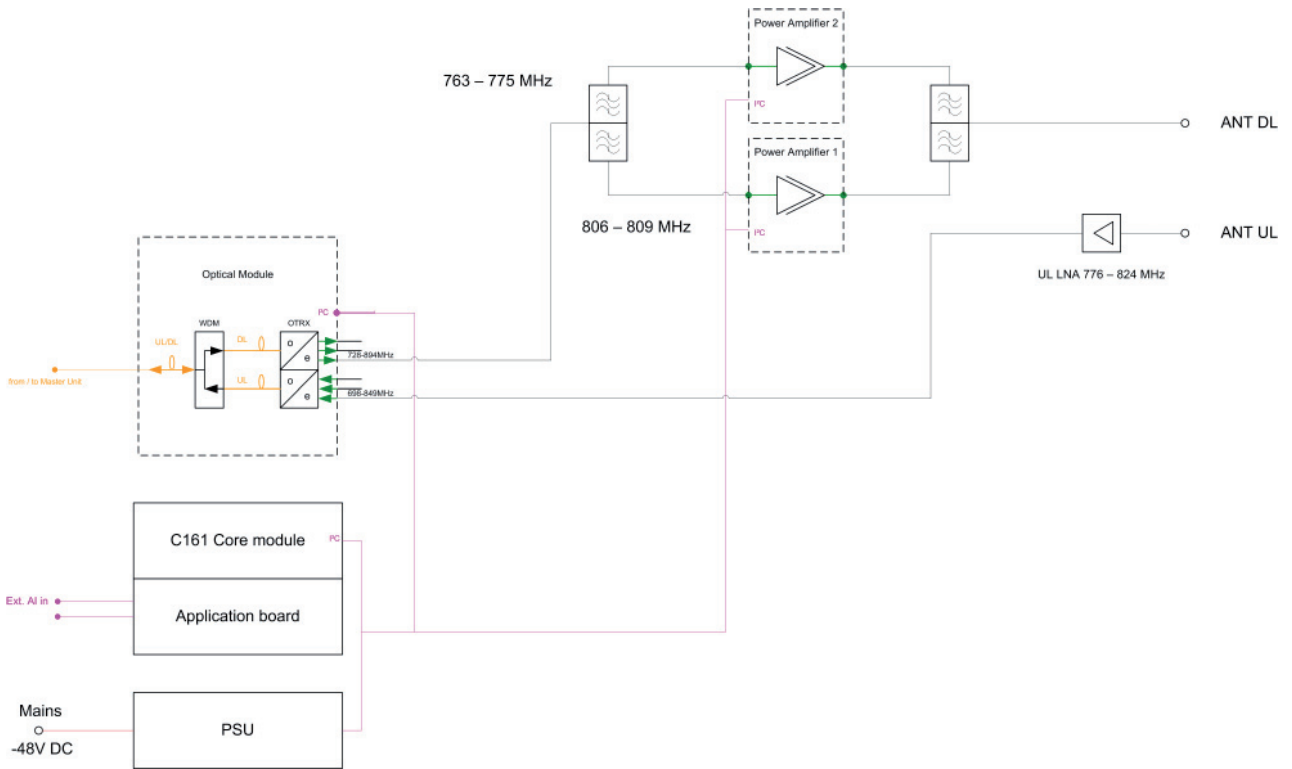
Environmental

Operating temperature range, °C	-33° C to +50° C
Ingress protection	RF part IP66 Fan part IP55

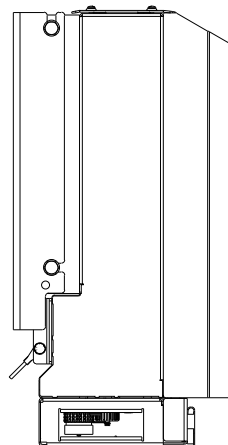
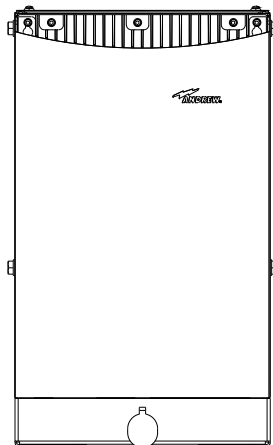
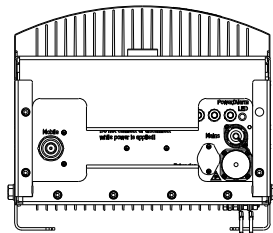
- * Both bands equipped
- ** Applicable to single modulation mode only
- *** With active cooling

All figures are typical values.

ION-M7P/8P S - Product Specification

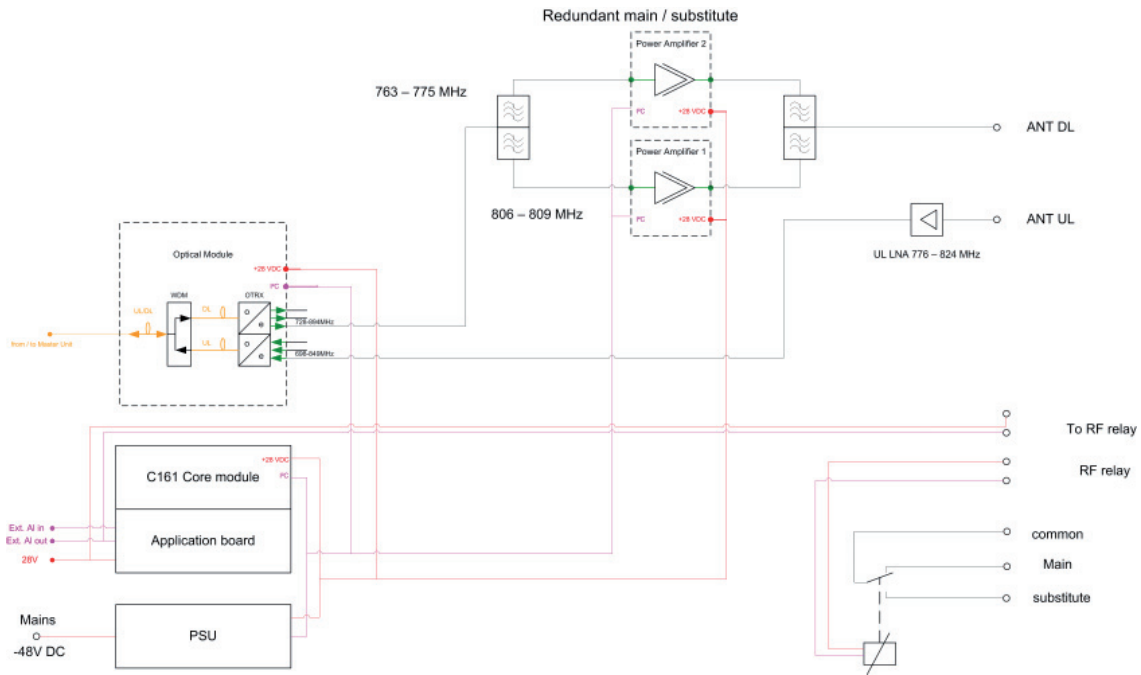


ION-M7P/8P S Design Principle

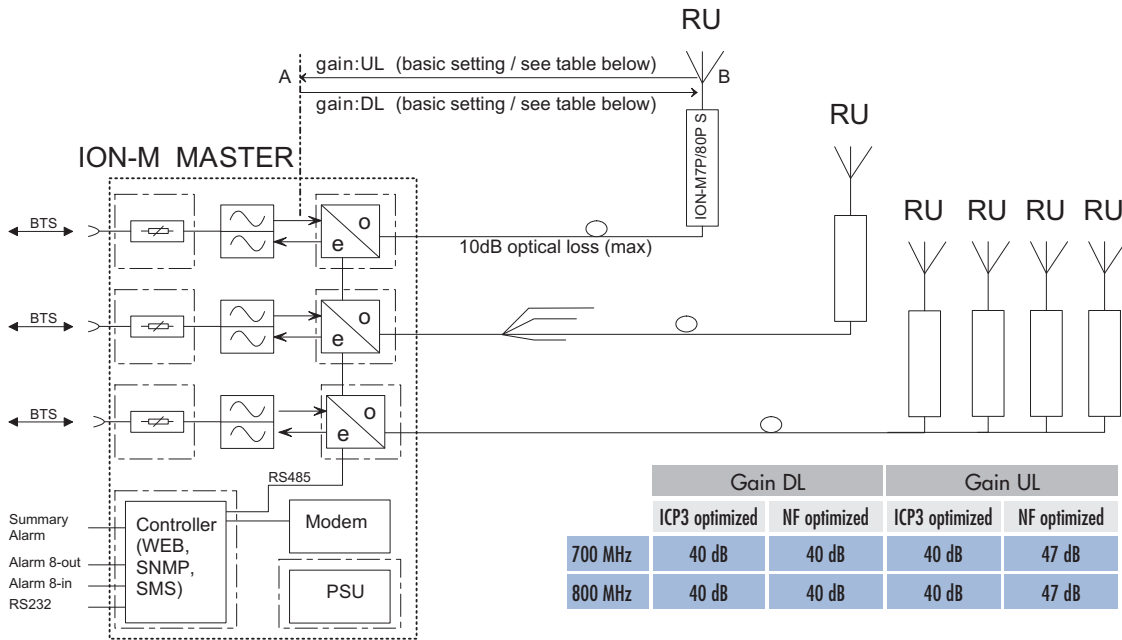


ION-M7P/8P S

ION-M7P/8P S - Product Specification



ION-M7P/8P S Redundant Configuration



Design Principle ION System (One Subrack)



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