# Fiber Optic Repeater\_Quad-Band





#### 1800 MHz + 2100 MHz + 2600 MHz + 3800MHz

The Fiber Optic Repeater (FOR) is designed to solve problems of weak mobile signal in the place that is far away from the Base Transceiver Station (BTS) and has fiber optic cable network underground.

The system consists of two parts: Master Unit (MU) and Remote Unit (RU). The MU captures the BTS signal via donor antenna, then converts it into optic signal and transmits the amplified signal to the RU via fiber optic cable. The RU will reconvert the optic signal into RF signal and provide the signal to the areas where network coverage is inadequate. And the mobile signal is also amplified and retransmitted to the BTS via the opposite direction.

### Key features

- Aluminum-alloy casing with IP65 protection has high resistance to dust, water and corrosion.
- ightharpoonup Tx/Rx control and alarm messages can be transmitted via one fiber optic cable.
- > Stable and improved signal transmission quality.
- Adopting WDM module to realize long-distance transmission.
- ➤ Built-in 5G Dynamic TDD Sync Detection Module, automatic completion of 5G wireless network cell search and wireless signaling processing.
- One MU can support up to 4 RUs to maximize utilization of fiber optic cable, A star topology is supported between MU and RUs.
- ➤ USB/RJ45 port provides a link to a notebook for local supervision or IP Based NMS (Network Management System) that can remotely supervise repeater's working status and download operational parameters to the repeater via Ethernet.

#### Advantages

- ☑ Multi\_standards/Multi\_operators
- ☑ Remote Control
- Fiber Optic Cable Transmission
- ☑ Low consumption



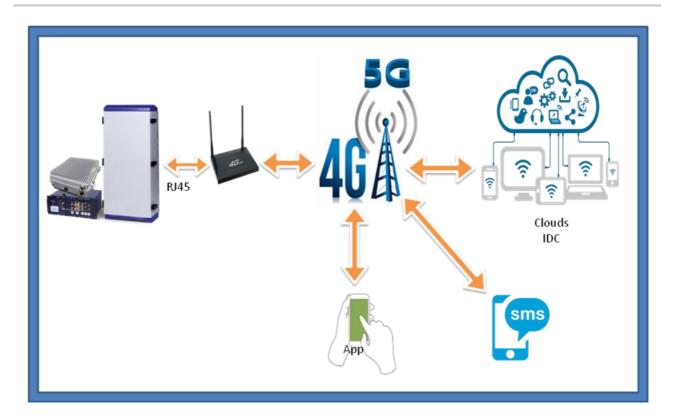
# Specifications

#### Technical characteristics

System	Items		Specifications			
Prequency Range			MU			
Prequency Range	System		DCS/LTE1800	UMTS/LTE2100	5GNR TDD-2600	5GNR TDD-3800
Bandwidth         75MHz         60MHz         100MHz         200MHz           Maximum Input Power (Non-Destructive)         5 dBm         200MHz           Transmission Distance         ≤ 10km         200MHz           Composite UL RF Output Power         1-0±2dbm per Band         3-0±2dbm per Band           Gain of MU         5±3db per Band         3-0±2dbm per Band           Manual Adjustable Attenuation         0~10dB         3-0±2dbm per Band           VSWR         ≤ 2.2         3-0±2dbm           Noise Figure@IRU Connection         ≤ 6dB         3-0±2dbm           Spurious Emission         9kHz~1GHz ≤ -36dBm         3-0±2dbm           System Delay         ≤ 5µSec         1/O Impedance         50Ω           RF Connector         4*N-Female(One Port per Band)         4-0±2dbm           Optical Onector         4*PC/APC         3-1±2dbm           Fiber Optical Type         Single Mode         4-0±2dbm           Optical Output Power         3-3±3dbm@1550m         4-0±2dbm           Optical Receiver Sensitivity         2-12dbm         4-0±2dbm           Operation Temperature Range         -10°C ~ +50°C         4-0±2dbm           Relative Humidity Range         ACI10~220V, 50/60Hz         4-0±2dbm           Power Consumption	Frequency Range	Uplink	1710~1785MHz	1920~1980MHz	2500~2600MHz	3700~3900MHz
Maximum Input Power (Non-Destructive)         5 dbm           Transmission Distance         ≤ 10km           Composite UL RF Output Power         -10±2dbm per Band           Gain of MU         5±3db per Band           Manual Adjustable Attenuation         0~10dB           VSWR         ≤ 2.2           Noise Figure@IRU Connection         ≤ 6dB           Spurious Emission         1GHz~12.75GHz ≤ -36dBm           System Delay         ≤ 5µSec           I/O Impedance         500           RF Connector         4*N-Female(One Port per Band)           Optic Connector         4*FC/APC           Fiber Optical Type         Single Mode           Optical Output Power         -3±3dBm@1550nm           Optical Receiver Sensitivity         ≥ -12dBm           Operation Temperature Range         -10°C ~ + 50°C           Relative Humidity Range         ≤ 85%           Application         Indoor(IP30)           Power Supply         ACI10~220V, 50/60Hz           Power Consumption         ≤ 30W           Dimensions         485*350*90mm           Weight         ≤ 8kg           Mounting         Rack Mounting           LED Indicator         Power Supply, Running, Alam           Local Contro		Downlink	1805~1880MHz	2110~2170MHz	2500~2600MHz	3700~3900MHz
Transmission Distance       ≤ 10km         Composite UL RF Output Power       -10±2dRm per Band         Gain of MU       5±3dB per Band         Manual Adjustable Attenuation       0~10dB         VSWR       ≤ 2.2         Noise Figure@IRU Connection       ≤ 6dB         Spurious Emission       9kH-z~1GHz ≤ -36dBm         Spurious Emission       1GHz~12.75GHz ≤ -30dBm         System Delay       ≤ 5µSec         I/O Impedance       50Ω         RF Connector       4*PN-Female(One Port per Band)         Optic Connector       4*PC/APC         Fiber Optical Type       Single Mode         Optical Output Power       -3±3dBm@1550nm         Optical Receiver Sensitivity       ≥ -12dBm         Operation Temperature Range       -10°C ~ + 50°C         Relative Humidity Range       ≤ 85%         Application       Indoor(IP30)         Power Supply       ACL10~220V, 50/60Hz         Power Consumption       ≤ 30W         Dimensions       485*350*90mm         Weight       ≤ 8kg         Mounting       Rack Mounting         LED Indicator       Power Supply, Running, Alarm         Local Control       Via USB Interface or WiFi Hotspot	Bandwidth		75MHz	60MHz	100MHz	200MHz
Composite UL RF Output Power         -10±2dBm per Band           Gain of MU         5±3dB per Band           Manual Adjustable Attenuation         0~10dB           VSWR         ≤ 2.2           Noise Figure@IRU Connection         ≤ 6dB           Spurious Emission         9kHz~1GHz ≤ ~36dBm           System Delay         ≤ 5µSec           I/O Impedance         50Ω           RF Connector         4*N-Female(One Port per Band)           Optic Connector         4*FC/APC           Fiber Optical Type         Single Mode           Optical Output Power         -3±3dBm@1550nm           Optical Receiver Sensitivity         ≥ -12dBm           Operation Temperature Range         -10°C ~ + 50°C           Relative Humidity Range         ≤ 85%           Application         Indoor(IP30)           Power Supply         AC110~220V, 50/60Hz           Power Consumption         ≤ 30W           Dimensions         485*350*90mm           Weight         ≤ 8kg           Mounting         Rack Mounting           LED Indicator         Power Supply, Running, Alam           Local Control         Via USB Interface or WiFi Hotspot	Maximum Input Power (Non-Destructive)		5 dBm			
Gain of MU         5±3dB per Band           Manual Adjustable Attenuation         0-10dB           VSWR         ≤ 2.2           Noise Figure@IRU Connection         ≤ 6dB           Spurious Emission         9kHz~1GHz; ≤ -36dBm           System Delay         ≤ 5µSec           I/O Impedance         50Ω           RF Connector         4°N-Female(One Port per Band)           Optic Connector         4°FC/APC           Fiber Optical Type         Single Mode           Optical Output Power         -3±3dBm@1550nm           Optical Receiver Sensitivity         ≥-12dBm           Operation Temperature Range         -10°C ~ + 50°C           Relative Humidity Range         ≤ 85%           Application         Indoor(IP30)           Power Supply         AC110~220V, 50/60Hz           Power Consumption         ≤ 30W           Dimensions         485°350°90mm           Weight         ≤ 8kg           Mounting         Rack Mounting           LED Indicator         Power Supply, Running, Alam           Local Control         Via USB Interface or WiFi Hotspot	Transmission Distance		≤ 10km			
Manual Adjustable Attenuation         0~10dB           VSWR         ≤ 2.2           Noise Figure@IRU Connection         ≤ 6dB           Spurious Emission         9kHz~1GHz ≤ -36dBm           System Delay         ≤ 5µSec           I/O Impedance         50Ω           RF Connector         4°N-Female(One Port per Band)           Optic Connector         4°FC/APC           Fiber Optical Type         Single Mode           Optical Output Power         -3±3dBm@1550nm           Optical Receiver Sensitivity         ≥ -12dBm           Operation Temperature Range         -10°C ~ + 50°C           Relative Humidity Range         ≤ 85%           Application         Indoor(IP30)           Power Supply         ACI10~220V, 50/60Hz           Power Consumption         ≤ 30W           Dimensions         485°350°90mm           Weight         ≤ 8kg           Mounting         Rack Mounting           LED Indicator         Power Supply, Running, Alarm           Local Control         Via USB Interface or WiFi Hotspot	Composite UL RF Output Power		-10±2dBm per Band			
VSWR         ≤ 2.2           Noise Figure@IRU Connection         ≤ 6dB           Spurious Emission         9kHz~1GHz; ≤ -36dBm           System Delay         ≤ 5µSec           I/O Impedance         50Ω           RF Connector         4*N-Female(One Port per Band)           Optic Connector         4*PC/APC           Fiber Optical Type         Single Mode           Optical Output Power         -3±3dBm@1550nm           Optical Receiver Sensitivity         ≥ -12dBm           Operation Temperature Range         -10°C ~ + 50°C           Relative Humidity Range         ≤ 85%           Application         Indoor(IP30)           Power Supply         AC110~220V, 50/60Hz           Power Consumption         ≤ 30W           Dimensions         485°350°90mm           Weight         ≤ 8kg           Mounting         Rack Mounting           LED Indicator         Power Supply, Running, Alarm           Local Control         Via USB Interface or WiFi Hotspot	Gain of MU		5±3dB per Band			
Noise Figure@IRU Connection         ≤ 6dB           Spurious Emission         9kHz~1GHz: ≤ -36dBm           System Delay         ≤ 5µSec           I/O Impedance         50Ω           RF Connector         4°N-Female(One Port per Band)           Optic Connector         4°FC/APC           Fiber Optical Type         Single Mode           Optical Output Power         -3±3dBm@1550nm           Optical Receiver Sensitivity         ≥-12dBm           Operation Temperature Range         -10°C ~ + 50°C           Relative Humidity Range         ≤ 85%           Application         Indoor(IP30)           Power Supply         AC110~220V, 50/60Hz           Power Consumption         ≤ 30W           Dimensions         485°350°90mm           Weight         ≤ 8kg           Mounting         Rack Mounting           LED Indicator         Power Supply, Running, Alarm           Local Control         Via USB Interface or WiFi Hotspot	Manual Adjustable Attenuation		0~I0dB			
Spurious Emission9kHz~1GHz ≤ -36dBm 1GHz~12.75GHz: ≤ -30dBmSystem Delay≤ 5μSecI/O Impedance $50\Omega$ RF Connector4°N-Female(One Port per Band)Optic Connector4°FC/APCFiber Optical TypeSingle ModeOptical Output Power-3±3dBm@1550nmOptical Receiver Sensitivity≥ -12dBmOperation Temperature Range-10°C ~ + 50°CRelative Humidity Range≤ 85%ApplicationIndoor(IP30)Power SupplyAC110~220V, 50/60HzPower Consumption≤ 30WDimensions485°350°90mmWeight≤ 8kgMountingRack MountingLED IndicatorPower Supply, Running, AlarmLocal ControlVia USB Interface or WiFi Hotspot	VSWR		≤ 2.2			
Spurious Emission         1GHz~12.75GHz: ≤ -30dBm           System Delay         ≤ 5µSec           I/O Impedance         50Ω           RF Connector         4°N-Female(One Port per Band)           Optic Connector         4°FC/APC           Fiber Optical Type         Single Mode           Optical Output Power         -3±3dBm@1550nm           Optical Receiver Sensitivity         ≥ -12dBm           Operation Temperature Range         -10°C ~ + 50°C           Relative Humidity Range         ≤ 85%           Application         Indoor(IP30)           Power Supply         AC110~220V, 50/60Hz           Power Consumption         ≤ 30W           Dimensions         485°350°90mm           Weight         ≤ 8kg           Mounting         Rack Mounting           LED Indicator         Power Supply, Running, Alarm           Local Control         Via USB Interface or WiFi Hotspot	Noise Figure@IRU Connection		≤ 6dB			
System Delay $≤ 5μSec$ I/O Impedance $50Ω$ RF Connector $4^*N$ -Female(One Port per Band)  Optic Connector $4^*FC/APC$ Fiber Optical Type $Single Mode$ Optical Output Power $-3\pm 3dBm@1550nm$ Optical Receiver Sensitivity $≥ -12dBm$ Operation Temperature Range $-10^\circ C \sim +50^\circ C$ Relative Humidity Range $≤ 85\%$ Application Indoor(IP30)  Power Supply $AC110^\circ 220V$ , $50/60Hz$ Power Consumption $≤ 30W$ Dimensions $485^\circ 350^\circ 90mm$ Weight $≤ 8kg$ Mounting Rack Mounting  LED Indicator Power Supply, Running, Alarm  Local Control $Via USB Interface or WiFi Hotspot$	Spurious Emission		9kHz~IGHz: ≤ -36dBm			
I/O Impedance  RF Connector  4°N-Female(One Port per Band)  Optic Connector  4°FC/APC  Fiber Optical Type  Single Mode  Optical Output Power  Optical Receiver Sensitivity  ○peration Temperature Range  Relative Humidity Range  Application  Indoor(IP30)  Power Supply  AC110~220V, 50/60Hz  Power Consumption  Single Mode  -3±3dBm@1550nm  -1.2dBm  -1.0°C ~ + 50°C  8 elative Humidity Range  ≤ 85%  AC110~220V, 50/60Hz  -230W  Dimensions  485°350*90mm  Weight  Selkg  Mounting  Rack Mounting  LED Indicator  Power Supply, Running, Alarm  Local Control			1GHz~12.75GHz: ≤ -30dBm			
RF Connector       4°N-Female(One Port per Band)         Optic Connector       4°FC/APC         Fiber Optical Type       Single Mode         Optical Output Power       -3±3dBm@1550nm         Optical Receiver Sensitivity       ≥-12dBm         Operation Temperature Range       -10°C ~ + 50°C         Relative Humidity Range       ≤ 85%         Application       Indoor(IP30)         Power Supply       AC110~220V, 50/60Hz         Power Consumption       ≤ 30W         Dimensions       485°350°90mm         Weight       ≤ 8kg         Mounting       Rack Mounting         LED Indicator       Power Supply, Running, Alarm         Local Control       Via USB Interface or WiFi Hotspot	System Delay		≤ 5µSec			
Optic Connector       4°FC/APC         Fiber Optical Type       Single Mode         Optical Output Power       -3±3dBm@1550nm         Optical Receiver Sensitivity       ≥-12dBm         Operation Temperature Range       -10°C ~ + 50°C         Relative Humidity Range       ≤ 85%         Application       Indoor(IP30)         Power Supply       AC110~220V, 50/60Hz         Power Consumption       ≤ 30W         Dimensions       485°350°90mm         Weight       ≤ 8kg         Mounting       Rack Mounting         LED Indicator       Power Supply, Running, Alarm         Local Control       Via USB Interface or WiFi Hotspot	I/O Impedance		50Ω			
Fiber Optical Type       Single Mode         Optical Output Power       -3±3dBm@1550nm         Optical Receiver Sensitivity       ≥-12dBm         Operation Temperature Range       -10°C ~ +50°C         Relative Humidity Range       ≤ 85%         Application       Indoor(IP30)         Power Supply       AC110~220V, 50/60Hz         Power Consumption       ≤ 30W         Dimensions       485*350*90mm         Weight       ≤ 8kg         Mounting       Rack Mounting         LED Indicator       Power Supply, Running, Alarm         Local Control       Via USB Interface or WiFi Hotspot	RF Connector		4*N-Female(One Port per Band)			
Optical Output Power       -3±3dBm@1550nm         Optical Receiver Sensitivity       ≥-12dBm         Operation Temperature Range       -10°C ~ + 50°C         Relative Humidity Range       ≤ 85%         Application       Indoor(IP30)         Power Supply       AC110~220V, 50/60Hz         Power Consumption       ≤ 30W         Dimensions       485*350*90mm         Weight       ≤ 8kg         Mounting       Rack Mounting         LED Indicator       Power Supply, Running, Alarm         Local Control       Via USB Interface or WiFi Hotspot	Optic Connector		4*FC/APC			
Optical Receiver Sensitivity       ≥-12dBm         Operation Temperature Range       -10°C ~ +50°C         Relative Humidity Range       ≤ 85%         Application       Indoor(IP30)         Power Supply       ACI10~220V, 50/60Hz         Power Consumption       ≤ 30W         Dimensions       485*350*90mm         Weight       ≤ 8kg         Mounting       Rack Mounting         LED Indicator       Power Supply, Running, Alarm         Local Control       Via USB Interface or WiFi Hotspot	Fiber Optical Type		Single Mode			
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Optical Output Power		-3±3dBm@1550nm			
Relative Humidity Range       ≤ 85%         Application       Indoor(IP30)         Power Supply       ACI 10~220 V, 50/60 Hz         Power Consumption       ≤ 30 W         Dimensions       485*350*90 mm         Weight       ≤ 8kg         Mounting       Rack Mounting         LED Indicator       Power Supply, Running, Alarm         Local Control       Via USB Interface or WiFi Hotspot	Optical Receiver Sensitivity		≥-I2dBm			
Application       Indoor(IP30)         Power Supply       ACI 10~220 V, 50/60 Hz         Power Consumption       ≤ 30 W         Dimensions       485*350*90mm         Weight       ≤ 8kg         Mounting       Rack Mounting         LED Indicator       Power Supply, Running, Alarm         Local Control       Via USB Interface or WiFi Hotspot	Operation Temperature Range		$-10$ °C $\sim +50$ °C			
Power Supply       ACI 10~220V, 50/60Hz         Power Consumption       ≤ 30W         Dimensions       485*350*90mm         Weight       ≤ 8kg         Mounting       Rack Mounting         LED Indicator       Power Supply, Running, Alarm         Local Control       Via USB Interface or WiFi Hotspot	Relative Humidity Range		≤ 85%			
Power Consumption       ≤ 30W         Dimensions $485*350*90mm$ Weight       ≤ 8kg         Mounting       Rack Mounting         LED Indicator       Power Supply, Running, Alarm         Local Control       Via USB Interface or WiFi Hotspot	Application		Indoor(IP30)			
Dimensions $485*350*90mm$ Weight $\leq 8kg$ MountingRack MountingLED IndicatorPower Supply, Running, AlarmLocal ControlVia USB Interface or WiFi Hotspot	Power Supply		ACI10~220V, 50/60Hz			
Weight≤ 8kgMountingRack MountingLED IndicatorPower Supply, Running, AlarmLocal ControlVia USB Interface or WiFi Hotspot	Power Consumption		≤ 30W			
MountingRack MountingLED IndicatorPower Supply, Running, AlarmLocal ControlVia USB Interface or WiFi Hotspot	Dimensions		485*350*90mm			
LED Indicator Power Supply, Running, Alarm Via USB Interface or WiFi Hotspot	Weight		≤ 8kg			
Local Control Via USB Interface or WiFi Hotspot			Rack Mounting			
	LED Indicator		Power Supply, Running, Alarm			
NMS Mode(Optional) Cloud NMS via 4G Wireless Modem			·			
	NMS Mode(Optional)		Cloud NMS via 4G Wireless Modem			

E-mail: sales@tspd.com.tw

### Network Management System (NMS)



# **Applications**

To expand signal coverage or fill signal blind area where signal is weak or unavailable.

Outdoor: Airports, tourism regions, golf courses, tunnels, factories, mining districts, villages, ...

**Indoor:** Hotels, exhibition centers, basements, shopping malls, offices, parking lots, ...

