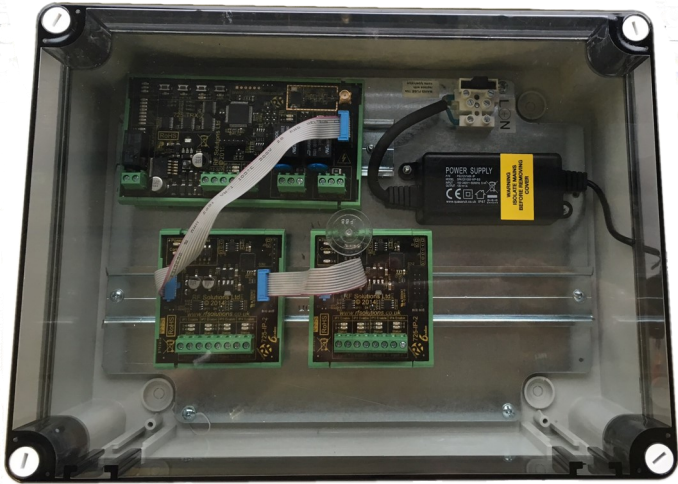# Professional LoRa Telemetry Radio System

- Ready to Use Telemetry Control

- 10 Channel System with feedback

- Range:

    - Up to 16000 metres 868MHz

- Relay Outputs: Momentary, Latching, Timed

- IP65 rated industrial enclosures

- System supplied pre-paired channels 1-10

Applications
- Lighting Control
- General Purpose Remote Switching
- Door Control
- Quarry remote Switching
- Access Control
- Machinery control

Description

Available as a 10 channel system, the PRO-TEL-8S10 is a ready to operate general purpose remote control systems using a highly secure transmission protocol for reliable operation.

Both transmitter and receiver units are supplied in IP65 rated enclosures with integral power supply containing industrial standard 'DIN Rail' (interchangeable). The relay outputs may be user set to operate as latching, momentary or set on timers from 0-60 minutes.

Additional transmitters can be added using the easy learn procedure. Any transmitter switch can be mapped to any individual or combination of receiver output(s).
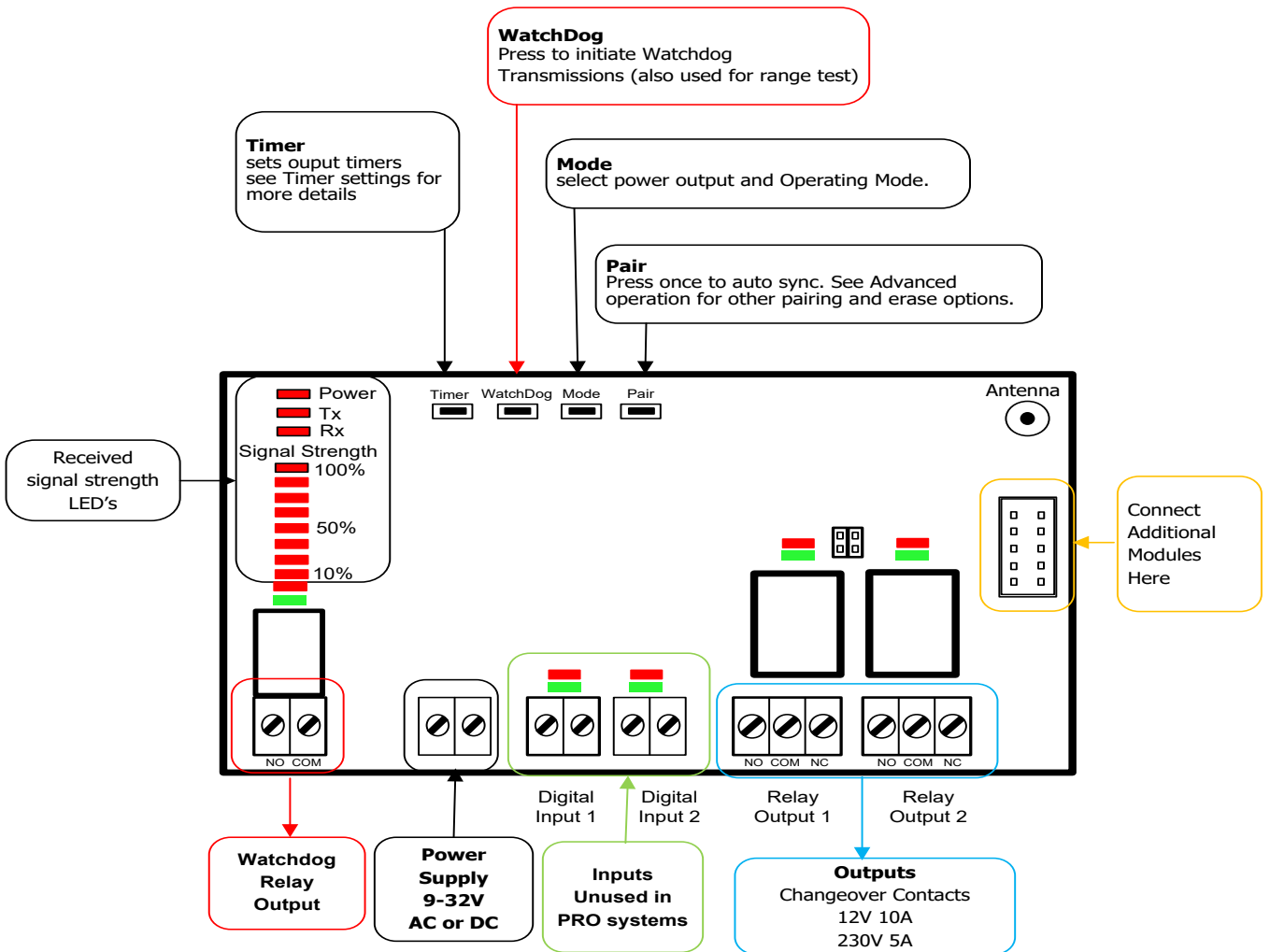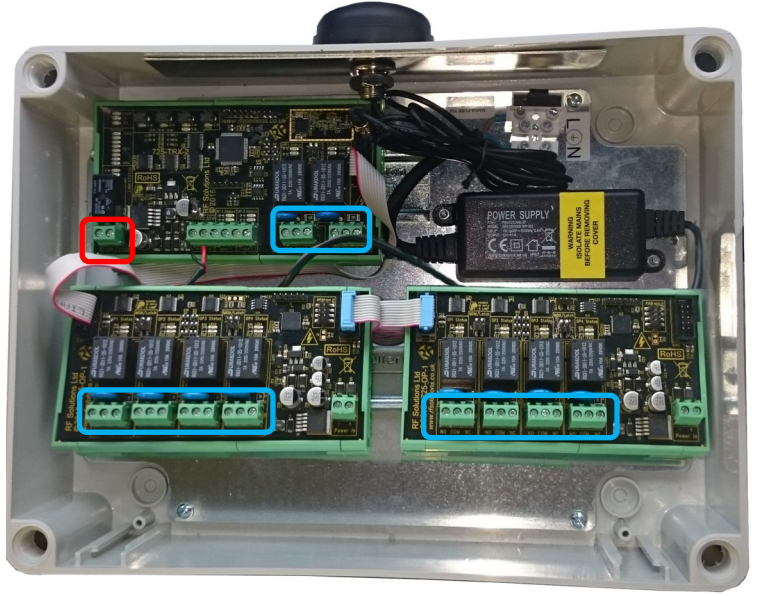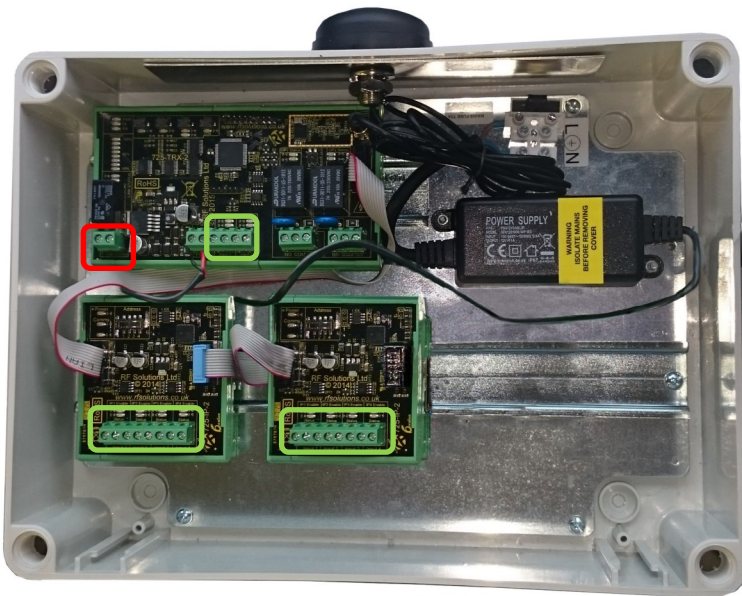
Part Number	Description	Range** (Metres)	Freq (MHz)	Relay Outputs (each @230Vac)
PRO-LORAT1—8S10	10 channel Remote Control System	1,000	869.5	10 x 10A
PRO-LORAT16—8S10	10 channel Remote Control System	16,000	869.5	10 x 10A

** Range stated is optimum, direct line of sight. In worst conditions this can be reduced by up to 50%

Professional Radio Control

PRO-LORA Overview

PRO-LORA-TXn: Volt free inputs

PRO-LORA-RXn: Volt free outputs

WatchDog
Press to initiate Watchdog
Transmissions (also used for range test)

Timer
sets ouput timers
see Timer settings for
more details

Mode
select power output and Operating Mode.

Pair
Press once to auto sync. See Advanced
operation for other pairing and erase options.

Power
Tx
Rx
Signal Strength

Timer   WatchDog   Mode   Pair

Antenna

100%

50%

10%

Received
signal strength
LED's

Connect
Additional
Modules
Here

NO COM

NO COM NC

NO COM NC

Digital
Input 1

Digital
Input 2

Relay
Output 1

Relay
Output 2

**Watchdog
Relay
Output**

**Power
Supply
9-32V
AC or DC**

**Inputs
Unused in
PRO systems**

Outputs
Changeover Contacts
12V 10A
230V 5A

Overview of Features

PRO-LORAn-8S10 has many 'optional' features. These are summarised below and explained in detail later in this document.

Pairing: The PRO-LORATn—8S10 system is supplied ready paired if you require further details on pairing or erasing the system please see our PRO-LORA system datasheet

WatchDog: This is a relay contact which is held 'ON' as long as the Auto TX signal is received.

TIMER: The outputs can be set to Momentary/Latching /Timed

Additional Modules: Additional Output modules or can be connect (max 16 of each)
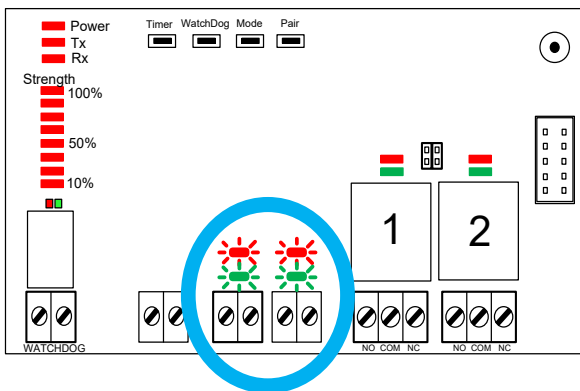
Please note: when using more then 2 output boards VCC must be connected to the 725-OP boards.

INPUTs Status LEDs

Inputs are activated by a closed contact switch.

When the status of any input is changed PRO-LORA immediately broadcasts the status (of all inputs).

After receiving the RF transmission, the paired PRO-LORA(s) respond with an ACKNOWLEDGE RF Signal.

GREEN LED	Status of Input
ON	Input Active / ON
OFF	Input Inactive / OFF

RED LED	Feedback from Receiver
OFF	The paired PRO-LORA Output is in Sync with this input
ON	No acknowledge from the paired PRO-LORA
Flashing	Input is not paired with any Receiver output

OUTPUTs Status LEDs

When the receiving PRO-LORA gets a valid signal from a paired device it will activate an output.

The status of active relays will be displayed on their corresponding LED's.
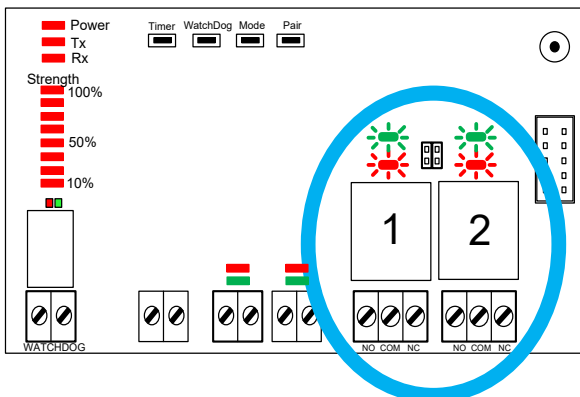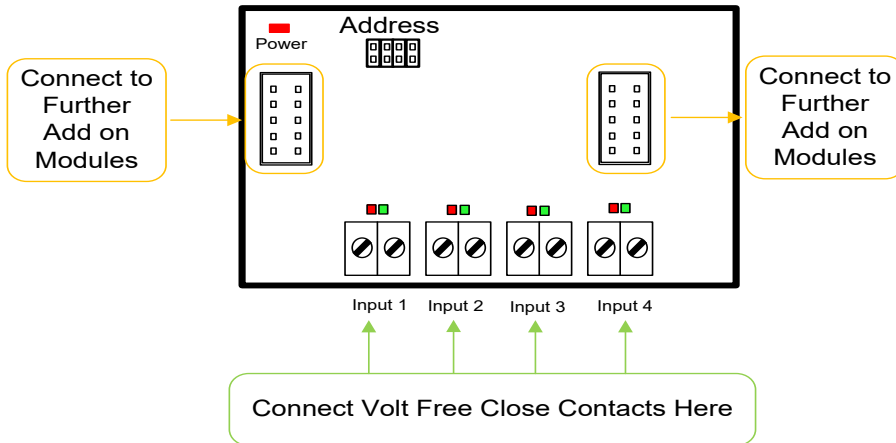
GREEN LED	Status of Output
ON	Relay is Active / ON
OFF	Relay is Inactive / OFF

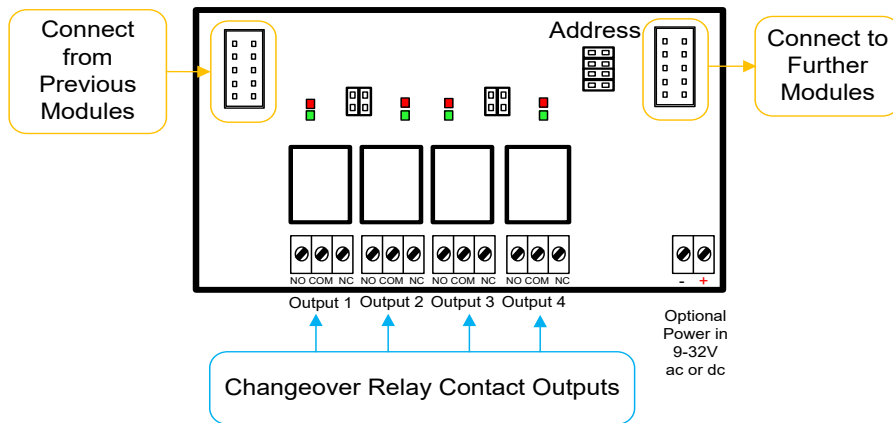| RED LED	Feedback from Receiver
OFF	The paired PRO-LORA Output is paired with this output
Flashing	Relay is unpaired with any Receiver output

Additional Input / Output Modules

Upto 16 Input and 16 Output modules can be added (64 inputs and 64 outpus max).
Cables are supplied to enable the modules to plug and play.
No other configuration is required the add on modules function as an extension of the PRO-LORA Module

725-IP Additional 4- Inputs Module

Connect to Further Add on Modules → Connect to Further Add on Modules

Power / Address

Input 1   Input 2   Input 3   Input 4

Connect Volt Free Close Contacts Here

725-OP Additional Outputs Module

Connect from Previous Modules → Connect to Further Modules

Address

NO COM NC   NO COM NC   NO COM NC   NO COM NC   - +

Output 1   Output 2   Output 3   Output 4

Optional Power in 9-32V ac or dc

Changeover Relay Contact Outputs

Connecting Add-on Input/Output Modules

Address settings
Each module must have a unique address set by the Address jumpers (it doesn't matter what the address is)

Note: outputs will cycle in address order for pairing, timers and erasing.
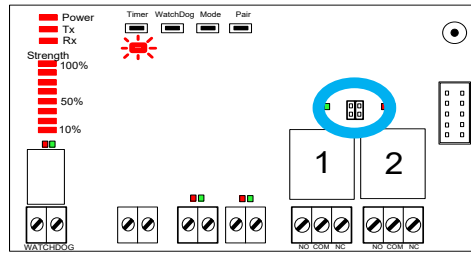
Connect to 725TRX
Connect to the 725TRX or previous I/O module using the ribbon cable provided

Note: When connecting more than one 725-OP module the power must be connected directly to the 725-OP module screw terminals

MOMENTARY/LATCHING setting links

Each Relay Output can be individually preset to Momentary/Latching by fitting or removing the Link Headers

Link fitted	LATCHING	Output changes state on each Transmit signal
Link Removed	MOMENTARY	Output operates for duration of Transmit signal

TIMER (Setting an Output Time Delay)

LED	Timer Output
8	60 min
7	30 min
6	10 min
5	1 min
4	30 sec
3	10 sec
2	5 sec
1	1/2 sec
0	Mom
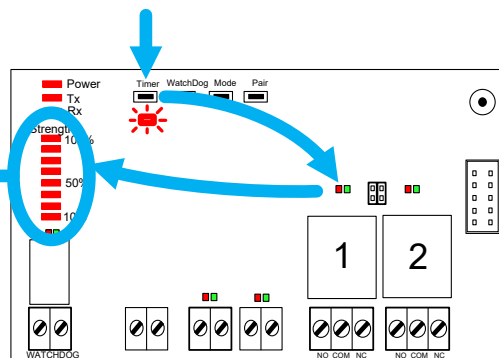
Setting a Timed Output.

1. Briefly press the TIMER Switch .
2. The TIMER and first relay output LED's will flash.
3. Press the TIMER switch again to scroll through relays until the chosen relay LED is flashing.
4. Wait until the chosen relay LED is on constantly.
5. Now Each press of the timer button will increase the timer delay in line with the TIMER OUTPUT Table Displayed on the signal strength LED's.
6. When you have selected the required delay, wait 3 seconds.
7. The Red TIMER LED will Stop flashing to show that the setting is saved

NOTE: Settings are saved even after power is removed.

NOTE: When zero LED's are lit the relays will operate as per the Momentary/Latching links.

Erase ALL Timers:

1. Press and hold the TIMER button for 10 seconds,
2. Whilst held the TIMER LED will turn on and then flash fast.
3. When the LED flashes fast release the timer button the erase is complete

.

Note: When setting a Time Delay;

If the Jumper Link is Removed the Time delay will restart on each transmission regardless of output Status.

If the Jumper Link is Fitted, the Time delay output Will Latch OFF / ON Timed with each transmission.

Display Signal Strength

This allows a user to check the signal strength (Walk Test)
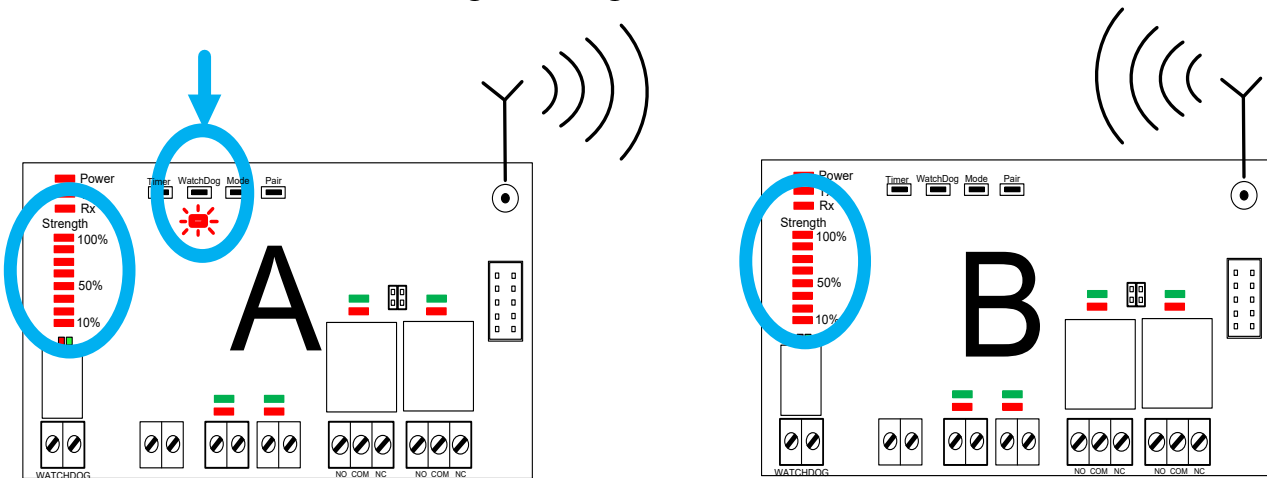
Any PRO-LORA will display a received signal on the signal Strength LED bar graph from a compatible transmitter.

NOTES: For reliable communications please ensure at least 3 LED's are lit in this test.

1. Press and hold the WatchDog button on the Transmitter for 5 seconds.
2. PRO-LORA emits a special transmission every second,
3. Any PRO-LORA will display the received Beacon on the signal strength LED bar graph.
4. An acknowledge will be sent back to the originating PRO-LORA by any paired PRO-LORA which will also display on its signal Strength LED bar graph.
5. When activated on a paired transmitter, LEDs 1-8 on both devices will show signal strength - the more LEDs flashing, the better the signal.

NOTES: For reliable communications please ensure at least 3 LED's are lit in this test.

Antenna and Range

2.1 Antenna
The system includes an antenna, If the range is inadequate then it may be necessary to mount the antenna externally. The antenna cable may be extended however please note that typically there is a 50% range reduction with every 3metres of coax cable used!

2.2 Range
The antenna choice and position directly controls the system range. Keep it clear of other metal in the system. The best position is protruding from the top of the product. This is often not desirable for practical or ergonomic reasons and thus a compromise may be needed.

Note that the space around the antenna is as important as the antenna itself. All radio systems are dependant on a radio signal being received through airspace.
The range quoted is the optimal in direct line of sight without obstacles and in good atmospheric conditions.

2.3 Signal Integrity
In systems where many encoders are in close proximity there may be occasions when, due to signal overlay between encoders, it is difficult or impossible to guarantee system integrity. In such circumstances it is the responsibility of the installer to ensure that the system performance is adequate for the purposes of the installation.

Professional Radio Control

Technical Specifications

Transceiver :   **PRO-LORA**

Dimensions: 136 x 78 x 42 mm

Storage Temperature: -10 to +70⁰ Celsius.
Operating Temperature: -10 to +50⁰ Celsius.

Electrical Characteristics	Min	Typical	Max	Units
Supply Voltage	12		32	Vdc or ac
Frequency:		869.500		MHz
RF Output Power (ERP) @ 869.50 MHz	-	100		mW
Supply Current : Quiescent		50		mA
All output relays operating		+101		mA
Watchdog relay operating		+25		mA
When transmitting		+95		mA

Input Module: **725-IP**

Dimensions: 68 x 78 x 42 mm

Storage Temperature: -10 to +70⁰ Celsius.
Operating Temperature: -10 to +50⁰ Celsius.

Electrical Characteristics	Min	Typical	Max	Units
Supply Voltage		N/A		V
Input Impedance				Ohms
Supply Current		15		mA

Output Module : 725-OP

Dimensions: 136 x 78 x 42 mm

ELECTRICAL CHARACTERISTICS	MODE	MIN	TYPICAL	MAX	Units
Supply Voltage			N/A		V
Relay Rating* (230Vac) RLY 1-4			5		A(rms)
Time delay from Tx on Switch to Rx Relay operation	FSK		30		mS
	LORA		30-1500		mS
Time delay from Tx sw relax to Rx Relay release	FSK		30		mS
	LORA		30-1500		mS
Supply Current : Quiescent		12			mA
All relays operating		+90			mA

Storage Temperature: -10 to +70⁰ Celsius.
Operating Temperature: -10 to +50⁰ Celsius.

Notes

1. Notes The power is derived directly from PRO-LORA
2. The relay contacts in this unit are for functional use only and must not be used for isolation purposes

Professional Radio Control

Enclosure:

DIN Rails mounted on steel plate
Integrated 12Vdc moulded Power Supply
5 Amp Fused terminal block
Material GW PLAST 120 °C
PUK antenna
Dimensions
External   315 x 235 x 130mm
Internal   300 x 220 x 120mm

Kit includes:

TX	RX
1x 725-TRX	1x 725-TRX
2x 725-IP with ribbon cables	2x 725-OP with ribbon cables
1x PUK antenna and ground plate	1x PUK antenna and ground plate
2x facia hinges	2x facia hinges
2x Glands	2x Glands
1x 12V 1A 230VAC power supply	1x 12V 1A 230VAC power supply
1x Enclosure	1x Enclosure

A 12Vdc power supply is incorporated. 12Vdc is presented on a fused terminal block. A Gland is supplied to enable power to enter the enclosure

RF Solutions Ltd. Recycling Notice
Meets the following EC Directives:

DO NOT
Discard with normal waste, please recycle.

ROHS Directive 2002/95/EC
Specifies certain limits for hazardous substances.

WEEE Directive 2002/96/EC
Waste electrical & electronic equipment. This product must be disposed of through a licensed WEEE collection point. RF Solutions Ltd., fulfills its WEEE obligations by membership of an approved compliance scheme.

Waste Batteries and Accumulators Directive 2006/66/EC
Where batteries are fitted, before recycling the product, the batteries must be removed and disposed of at a licensed collection point.

Environment Agency producer registration number: WEE/JB0104WV.

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