PDC Propeller De-Ice Controller Unit

Specification Sheet

Features

- Controls electrical power to propeller blade heating elements / boots
- Handles up to two boot circuits / phase outputs
- Adjustable on-off cycle timing for many different propeller boot makes, models and configurations
- Monitors boots voltage and current looking for faults:
  - Insufficient current to boot circuit
  - Too much current to boot circuit
  - Short-circuit to ground on output
  - Open circuit-breaker on power input
- Indicates operation and failure via external HEAT-ON and HEAT-FAIL lights
- Integrates with Garmin G900, other EFIS's and our VRX multi-function display
- CAN bus and RS232 interfaces

Description

The PDC provides an easy solution for aircraft requiring propeller heating / de-icing. All you need are boots fitted to the propeller, slip-rings, one panel switch, two annunciation lights, the PDC unit and some wiring to connect everything with.

The PDC is versatile enough to work with different aircraft types, different propellers and different boots. Most Epic LT's, many Lancair Evolutions, some Lancair IV's and various others currently employ the PDC.

The unit normally work from low voltage direct current to switch a large continuous current via two outputs to two phase propeller boot circuits. For a single phase boots circuit these two outputs may be tied together and double the current. The PDC handles it all.

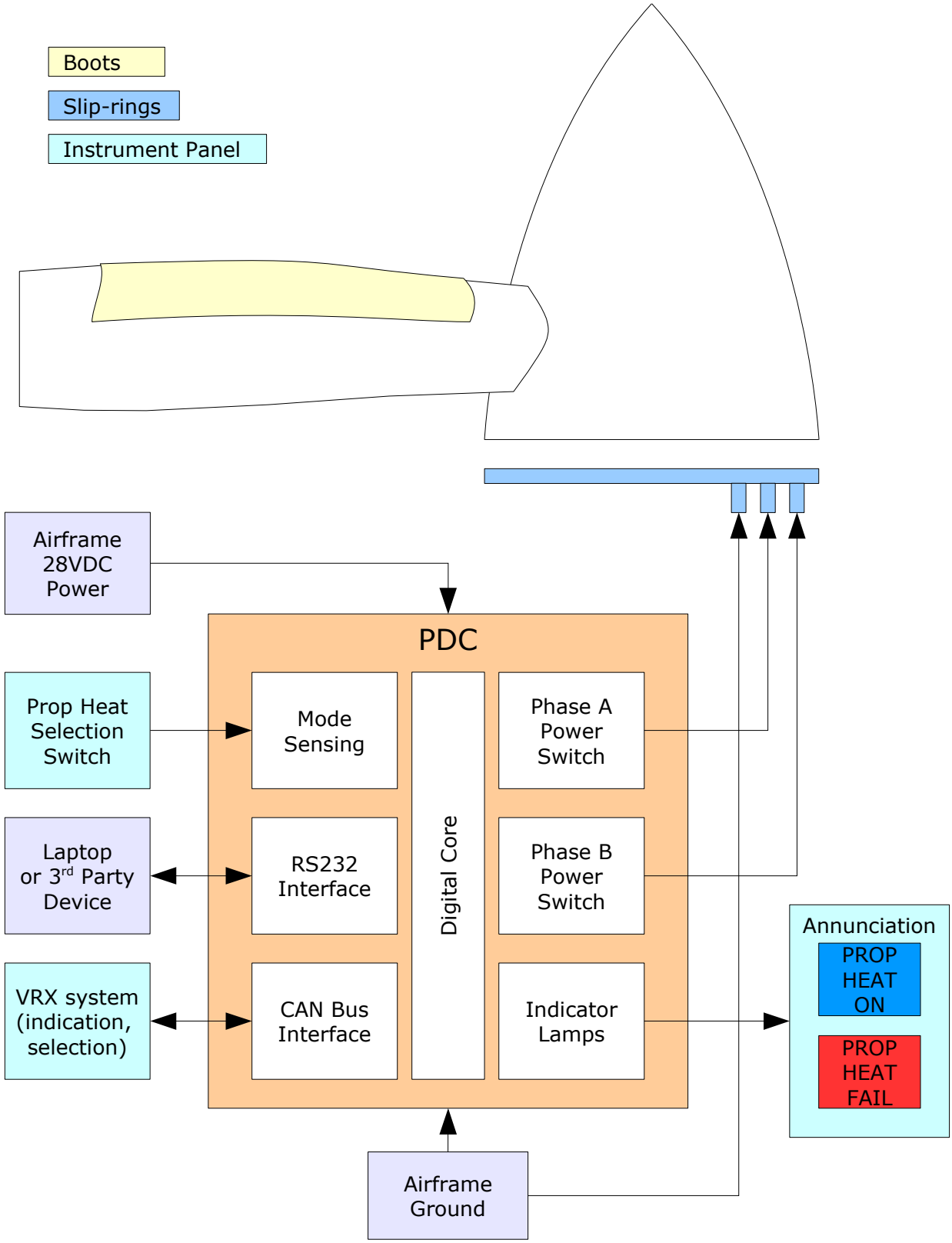
Each PDC not only gets configured for specific on-off cycling times but for minimum and maximum allowable currents, which all depend on the aircraft type, propeller and boots in question. The PDC illuminates the HEAT-FAIL light should the actual current fall outside this range during operation.

Activation is done via one panel switch, which may be a two position on-off type or a three position on-off-on type. The former only allows one heat setting and the latter two heat settings (high and low). When activated the HEAT-ON light illuminates.

The Garmin G900 seamlessly accept the HEAT-ON and HEAT-FAIL wires from the PDC unit and provide the proper annunciation without requiring extra configuration. Other EFIS systems require minor configuration.

Our VRX multi-function display can also interface with the PDC and present some operational detail.

Block Diagram – Typical Propeller De-icing Control



Maximum Ratings

1	POWER SUPPLY VOLTAGE RANGE	8 TO 32 VDC
2	STORAGE TEMPERTURE	-55 TO +125 ºC
3	OPERATING TEMPERTURE	-40 TO +85 ºC

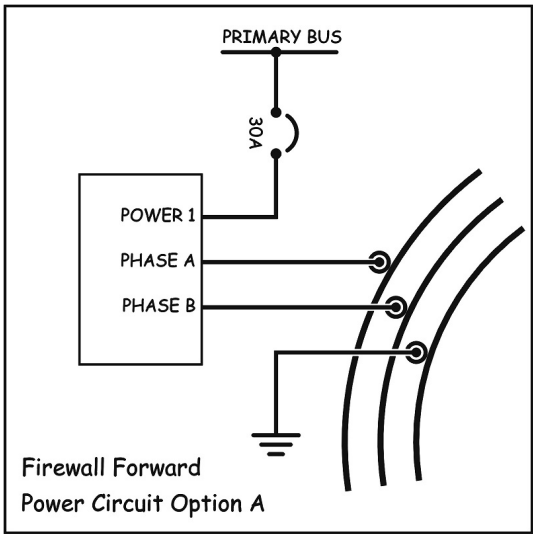
General Specifications

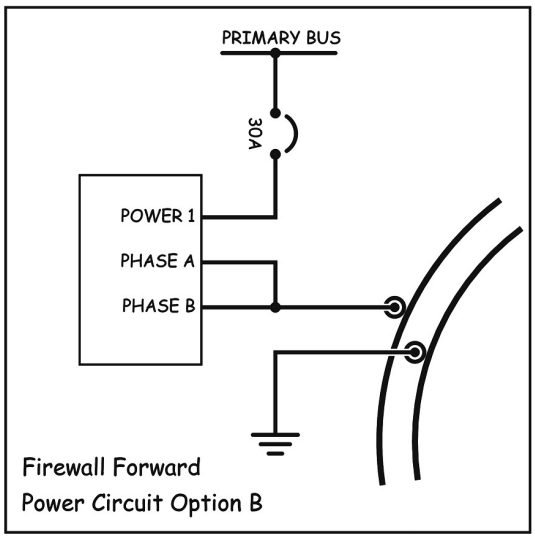
4	DIMENSIONS	100 x 75 x 25mm
5	WEIGHT	180 g

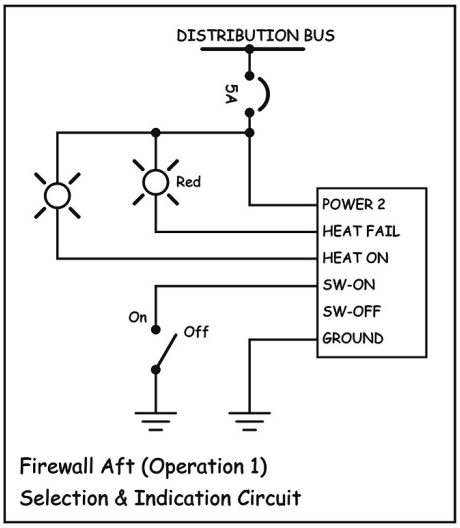
Electrical Characteristics

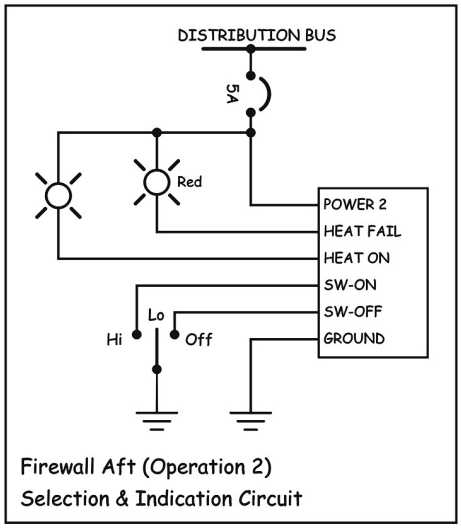
6	POWER CONSUMPTION (NOT SWITCHING ANY LOADS)	< 20mA @ 28VDC
7	MAXIMUM CONTINUOUS PHASE CURRENT (> 1 MINUTE)	30 AMPS (PER PHASE)
8	MAXIMUM SHORT-TERM PHASE CURRENT (< 1 SECOND)	80 AMPS (PER PHASE)

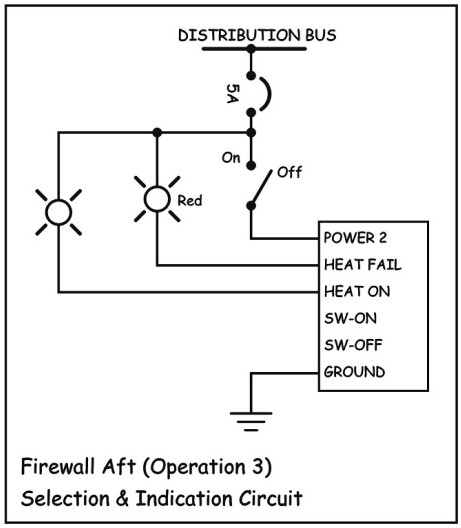
Electrical Connections



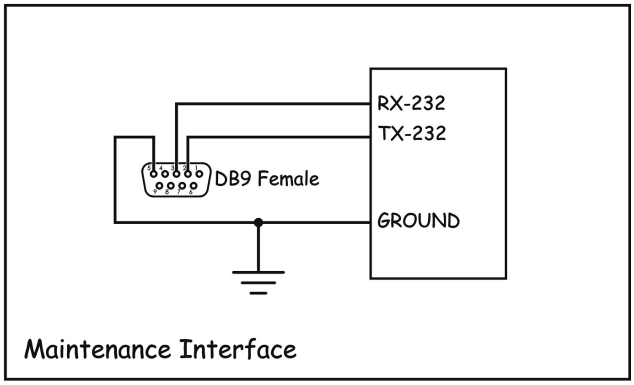




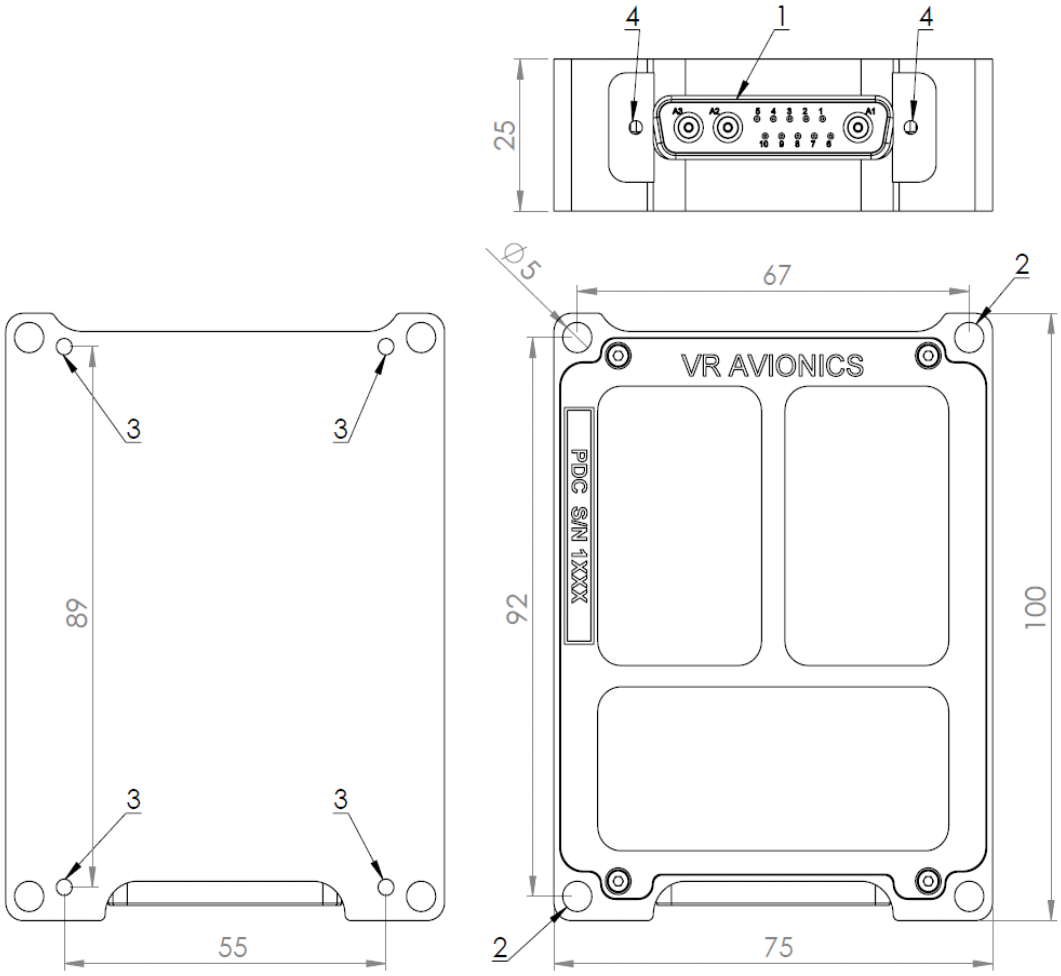




Note: Operation 3 above is only available with hardware version II of the PDC.

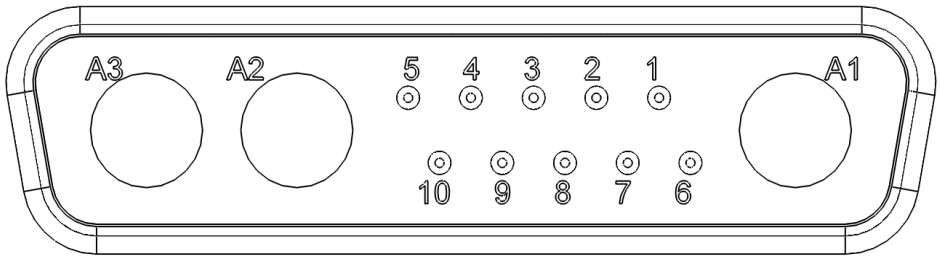


Hardware Version II - Dimensions



1. The PDC unit (hardware version II) uses a male 13-pin (13W3) mixed contact D-Sub connector. For the proper receptacle it interfaces with consult the PDC Operational & Install Manual.
2. For mounting there are four 5mm diameter holes located at each corner of the box.
3. Alternative mounting can be accomplished via four threaded (6-32) holes at the bottom that will accept 6-32 screws as long as ½ inch (12mm).
4. Connector is secured with the normal two 4-40 threaded screws.

Hardware Version II - Pin-outs (13W3 mixed contact d-sub)

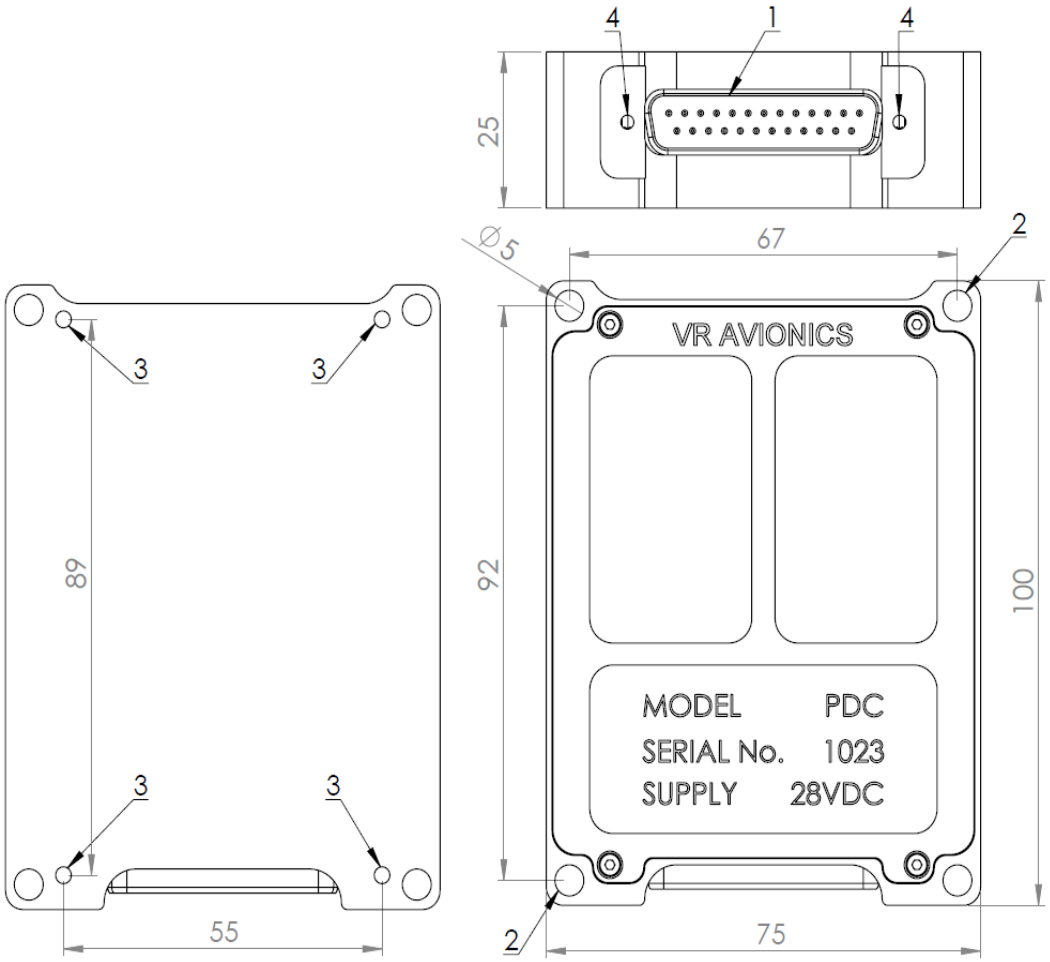


PINS (version II)	DIR	NAME	DESCRIPTION
A1	IN	POWER1	PRIMARY POWER INPUT (SOURCING PHASE CURRENTS)
6	IN	POWER2	SECONDARY POWER / HEAT SELECTION INPUT 3
5	GND	GROUND	AIRCRAFT SYSTEM GROUND
A2	OUT	PHASE A	30A SWITCHED POWER OUTPUT
A3	OUT	PHASE B	30A SWITCHED POWER OUTPUT
4	OUT	HEAT FAIL	5A SWITCHED GROUNDED OUTPUT
10	OUT	HEAT ON	5A SWITCHED GROUNDED OUTPUT
7	IN	SW-ON	HEAT SELECTION INPUT 1
1	IN	SW-OFF	HEAT SELECTION INPUT 2
2	I/O	CAN-H	CAN BUS INTERFACE HIGH-LINE
8	I/O	CAN-L	CAN BUS INTERFACE LOW-LINE
9	IN	RX-232	RS232 RECEIVE
3	OUT	TX-232	RS232 TRANSMIT

Hardware Version I – Dimensions

Please note this older version of the PDC hardware will be replaced by version II.

The biggest / most obvious difference is the connector.



1. Hardware version I uses a standard 25-pin D-Sub (M24308 series) male electrical connector. The recommended mating receptacle for it is the M24308/2-3. Consult the PDC Operational & Install Manual for more.
2. For mounting there are four 5mm diameter holes located at each corner of the box.
3. Alternative mounting can be accomplished via four threaded (6-32) holes at the bottom that will accept 6-32 screws as long as ½ inch (12mm).
4. Connector is secured with the normal two 4-40 threaded screws.

Hardware Version I - Pin-outs (standard 25-pin d-sub)

Please note this older version of the PDC hardware will be replaced by Version II.

The biggest / most obvious difference is the connector.

PINS (version I)	DIR	NAME	DESCRIPTION
10,11,22,23	IN	POWER1	PRIMARY POWER INPUT (SOURCING PHASE CURRENTS)
1	IN	POWER2	SECONDARY POWER INPUT
14,15	GND	GROUND	AIRCRAFT SYSTEM GROUND
8,9,20,21	OUT	PHASE A	30A SWITCHED POWER OUTPUT
12,13,24,25	OUT	PHASE B	30A SWITCHED POWER OUTPUT
6	OUT	HEAT FAIL	5A SWITCHED GROUNDED OUTPUT
18	OUT	HEAT ON	0.5A SWITCHED GROUNDED OUTPUT
19	IN	SW-ON	HEAT SELECTION INPUT 1
7	IN	SW-OFF	HEAT SELECTION INPUT 2
4	I/O	CAN-H	CAN BUS INTERFACE HIGH-LINE
16	I/O	CAN-L	CAN BUS INTERFACE LOW-LINE
2	IN	RX-232	RS232 RECEIVE
3	OUT	TX-232	RS232 TRANSMIT