

Technical Manual  
**MONITORS**  
**TYPE 635 & 636**

**Doc. Ref CD2004K**

This manual applies to 635 units of Mod status 4 and 636 units of Mod status 5  
(Refer also to System Manual CD2010)



Affirmed by Declaration  
of Conformity

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## INDEX

1.	INTRODUCTION .....	3
1.1	BEFORE POWERING-UP CHECK.....	3
1.2	Information on Conformity to EC Directives. ....	3
2.	CONNECTION DETAILS .....	4
3.	CONTROLS .....	5
3.1	Channel/Card Selector Switch.....	5
3.2	A, B, E Pushbuttons .....	5
3.3	Decimal Point Selector .....	5
3.4	636 ONLY. Normal - Reset Pushbuttons.....	5
3.5	External Reset for 636.....	6
3.6	Display Hold. ....	6
4.	USE WITH AMPLIFIER MODULES.....	6
4.1	Amplifier Modules 611, 615, 621, 626, 628.....	6
4.2	Trip Module 681 .....	6
4.3	Monitoring 4-20mA Signals .....	7
5.	SPECIFICATION .....	7
6.	WARRANTY AND SERVICE .....	8

### Table of Figures

Fig. 1a	636 Front Panel .....	4
Fig. 1b	636 Front Panel .....	4
Fig. 2	Decimal Point Selector .....	4

# 1. INTRODUCTION

The 635 and 636 are instruments in the 600 series of modules providing the function of channel selector and monitor. They can be plugged into any position of the system backplane which completes the interface with other modules such as 611, 615, 621, 628, 681, etc.

The 4½ digit LED display covers the signal range of ±10v with a ±19999 count display and a selectable decimal point position.

Up to 12 modules may be monitored which, with additional A/B selection, provides a 24-channel display facility (12 channel with 615, 628). The transducer excitation level of the amplifiers can also be displayed and an external logic signal may be applied to hold any displayed value.

The 636 also provides indication of peak, trough (max/min) and TIR stored signals with either pushbutton or logic reset control.

## 1.1 BEFORE POWERING-UP CHECK...

- 1.1.1 The supply voltage is correct to suit the 631/632 unit fitted and input range selected.
- 1.1.2 The various plug-in modules are in the correct positions in the housing.
- 1.1.3 The input and output plugs are in the correct sockets. Note that on the housing back-plane all input sockets and all output sockets are of the same type. (605/6/7 systems only.)
- 1.1.4 That each amplifier module has a unique address. (Refer to Amplifier Module Manuals)

NOTE: Ensure system is switched OFF when removing or replacing modules in rack. Failure to do so may cause damage to modules.

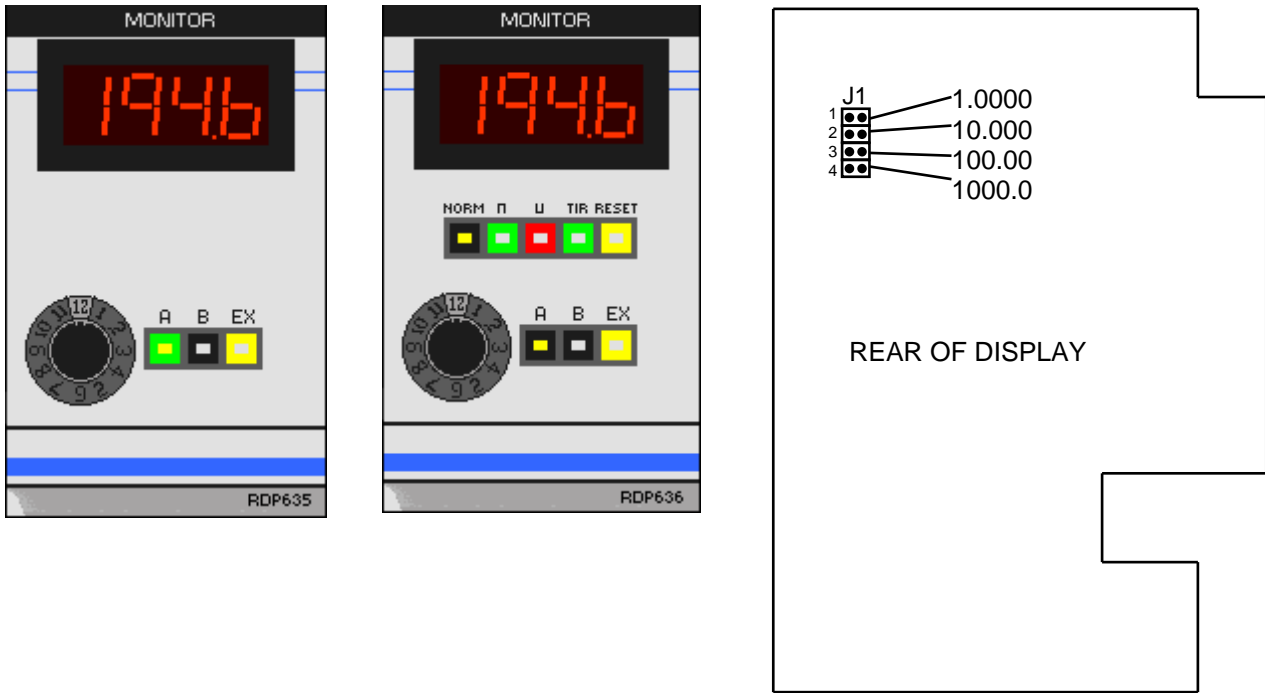
## 1.2 Information on Conformity to EC Directives.

This module is not CE marked because it is intended for use as a component of a larger system. RDP CE mark full modular 600 systems that includes a 60X housing and a 63X power supply where the system is fully populated with either 600 series amplifier/display modules or blank panels.

If the module is part of a full 600 system, refer to the system manual (CD2010) for CE certification.

If the module is not part of the full 600 system, it is the responsibility of the organization/individual producing the system to assess and/or test EMC compatibility.

Fig. 1a 635 Front Panel Fig. 1b 636 Front Panel Fig. 2 Decimal Point Selector



## 2. CONNECTION DETAILS

Power, signal, channel address connections are made automatically on plugging into the 600 backplane.

Other connections, e.g. hold, reset, and links to a second rack, if fitted, are made via circular DIN or single 1mm pins as shown below:

DIN Connector A:		
Pin 1	+5V	Outputs to Rack 2 when fitted
Pin 2	0VD	
Pin 3	+15V	
Pin 4	-15V	
Pin 5	0VA	
Pin 6	0VA	
Pin 7	Master/Save out	

DIN Connector B:		
Pin 1	Signal A	Of Rack 2 when fitted
Pin 2	Signal B	
Pin 3	Excitation	
Pin 4	Address 0	To Rack 2 when fitted
Pin 5	Address 1	
Pin 6	Address 2	
Pin 7	Address 3	

DIN Connector C:	
Pin 1	Hold out
Pin 2	Reset out
Pin 3	Rack 1/2 select
Pin 4	Reset in
Pin 5	No connection

1mm Pins		
A	Signal A	Of Rack 1
B	Signal B	
E	Excitation	
MS	Master/Slave in	
H	Hold in	
R	As C4	

### 3. CONTROLS

#### 3.1 Channel/Card Selector Switch

This is a 12-position rotary switch controlling a 4-line BCD address bus on the backplane which operates as follows:

If the switch is set to position 1, then the relevant BCD code is applied to the bus. the amplifier in position 1 in the rack, having its channel address switch set to 1, decodes the address and closes analogue switches to connect output signals A, B and excitation to the backplane analogue busses A, B and E.

#### 3.2 A, B, E Pushbuttons

These switches determine which analogue signal bus is connected to the dpm for display. An LED in each button indicates which signal is selected. For example, to monitor the output of channel B of an amplifier in position 6 of the rack, set the rotary switch to 6 and press and release button B. The LED in button B will now be lit showing that the display is indicating channel B output signal level.

#### 3.3 Decimal Point Selector

This is a 4-way jumper-link behind the front panel, accessible on sliding the unit partially out of the rack <b>(SWITCH OFF POWER FIRST)</b> . Note: a display of 10000 corresponds to a signal of 10v so that with the jumper in position 2, the display will read directly in volts.	Position	Decimal Point
	1	1.0000
	2	10.000
	3	100.00
	4	1000.0

If no decimal point is required, the link may be parked by linking pins 1-2 vertically. When EX is selected, the decimal point automatically switches to position 2, to indicate volts directly.

#### 3.4 636 ONLY. Normal - Reset Pushbuttons

These buttons select the desired display mode for the signal selected by the channel and A/B controls.

##### Normal

With this mode selected, the display continuously follows the signal as with the 635.

##### Peak

When this mode is selected, the display indicates the peak or maximum (most-positive-going) level attained by the signal since a reset was applied. Note that the peak store circuit continues operating even if Normal or Trough or TIR modes are selected.

##### Trough

This mode is similar to peak except that the trough or minimum (most-negative-going) signal level is indicated.

##### TIR (Total Indicated Range)

In this mode the display indicates the difference between the stored values of peak and trough.

### **3.5 External Reset for 636.**

The backplane Reset bus may be used to reset peak/trough displays, in addition to the Reset push-button. To enable this function, solder link SP4 on the main board must be fitted. (Note: the Reset bus also operates the 681 limits latched reset.)

A logic high applied to the backplane reset pin "R" or 5-pin DIN connector C pin 2 will then reset the 636 store circuits. Digital Common is on pin 2 of the 7-pin DIN connector A.

### **3.6 Display Hold.**

NOTE HOLD is active low (i.e. NOT HOLD)

The display A to D converter may be inhibited to freeze the display by applying a logic low to the HOLD input or linking this to Digital Common via a switch, etc. To enable this function, solder link SP3 on the main board must be fitted. (Note: the HOLD connection is bussed on the backplane for use with amplifier modules Sample/Hold option when fitted.)

The HOLD input may be applied to the backplane HOLD pin "H" or 5-pin DIN connector C pin 1. The internal pull-up resistor (to 5v) is normally 10k $\Omega$ . Digital Common is on pin 2 of the 7-pin DIN connector A.

SP3 is located on the 635/6 PCB near to the 32 way edge connector.

## **4. USE WITH AMPLIFIER MODULES**

### **4.1 Amplifier Modules 611, 615, 621, 626, 628**

To monitor the outputs of these modules:-

- (a) Set the rotary Channel No. switch to the number of the channel to be monitored.
- (b) Press and release button A. The LED in this button will light and the display will indicate the output of channel A of the selected module.  
Press and release button B to monitor channel B of the selected module.  
Note: the 615 and 628 are single channel amplifiers: refer to the respective manual for function of the B button.
- (c) Press and release button EX. The LED in this button will light and the display indicates the excitation voltage of the selected channel.  
The 611 has separate excitation supplies for channels A and B and the 635/6 will normally indicate channel A excitation value. To display channel B excitation, press and hold in the EX button on the relevant 611.

### **4.2 Trip Module 681**

To monitor the four limit set levels:-

- (a) Set the rotary Channel No. switch to the number of the channel housing the 681.
- (b) Press and release button A. The 635/6 now indicates the level of the 681 limits as selected by the Level switch on the 681.

### 4.3 Monitoring 4-20mA Signals

When amplifier modules are set for 4-20mA output at the backplane output connector the 635/636 input remains connected, via the backplane bus, to the voltage output (i.e. the input to the 611/621 etc. voltage to current converter circuits).

Normally the voltage to current relationship is approximately 0 to +10v  $\approx$  4-20mA, i.e. 0v  $\approx$  4mA and +10v  $\approx$  20mA. Hence, when monitoring a 4mA signal the 635/636 will indicate  $\approx$  0000 and 20mA  $\approx$  +10000, etc.

## 5. SPECIFICATION

Display	$\pm$ 19999 10mm red LED
Sample Rate	2 ½ per second
Linearity	$\pm$ 0.05% FS
System Accuracy (Difference between display & amplifier analogue outputs)	$\pm$ 0.03% FS $\pm$ 2 digits
Temperature Coefficient	
Zero	0.002% FS/°C typical
Gain	0.005% FS/°C typical
Input Signal	$\pm$ 10V ( $\pm$ 12V max) for $\pm$ 10000 display
Input Impedance	>3M $\Omega$
Supply	$\pm$ 15V ( $\pm$ 1V) at 0.1A (0.2A for 636)
Channels	12 modules x 2 (A and B) = 24 (with 611, 621, 626) plus excitation
Address Code	Hexadecimal complementary BCD, 4-line
Dimensions	3U high, 16HP (81mm) wide, 195mm deep (including knob and connector)
Operating Temperature	0 to 60°C

### 636 only:

Functions	Peak, Trough, TIR, Normal. Reset
Accuracy	0.1% FS typical peak and trough, 0.2% TIR
Speed	0.1mS for 0 to FS step, or 10kHz.

## **6. WARRANTY AND SERVICE**

### WARRANTY.

R.D.P. Electronics products are warranted against defects in materials or workmanship. This warranty applies for one year from the date of delivery. We will repair or replace products that prove to be defective during the warranty period provided they are returned to R.D.P. Electronics.

This warranty is in lieu of all other warranties, expressed or implied, including the implied warranty of fitness for a particular purpose to the original purchaser or to any other person. R.D.P. Electronics shall not be liable for consequential damages of any kind.

If the instrument is to be returned to R.D.P. Electronics for repair under warranty, it is essential that the type and serial number be quoted, together with full details of any fault.

### SERVICE.

We maintain comprehensive after-sales facilities and the instrument can, if necessary be returned to our factory for servicing.

Equipment returned to us for servicing, other than under warranty, must be accompanied by an official order as all repairs and investigations are subject to at least the minimum charge prevailing at the date of return.

The type and serial number of the instrument should always be quoted, together with full details of any fault and services required.

### IMPORTANT NOTES.

1. No service work should be undertaken by the customer while the unit is under warranty except with the authorisation of RDP Electronics.
2. If the instrument is to be returned to R.D.P. Electronics for repair, (including repair under warranty) it is essential that it is suitably packed and that carriage is insured and prepaid. R.D.P. Electronics can accept no liability whatsoever for damage sustained during transit.
3. It is regretted that the above warranty only covers repairs carried out at our factory. Should the instrument have been incorporated into other equipment that requires our engineers to perform the repair on site, a charge will be made for the engineer's time to and from the site, plus any expenses incurred.

The aforementioned provisions do not extend the original warranty period of any product that has been either repaired or replaced by R.D.P. Electronics.

**THIS WARRANTY MAY BE NULL AND VOID SHOULD  
THE CUSTOMER FAIL TO MEET OUR TERMS OF PAYMENT.**