



V565-0000

# VISIPAK™ V565

## High Performance Loop-Powered LCD Indicator

Provides a 3-1/2 Digit LCD Indication with a 1 Volt Loop Drop



- Loop Drop of Only 1 Volt Provides Extra Compliance
- Selectable Square Root Mode for Flow Applications
- LCD Readable from 30ft.
- Switch Selectable 4-20mA, 10-50mA, Decimal Point and Direct/Reverse "Display Gain"

- Front Panel
- FM and CSA Safety Approval for Hazardous Installations
- Wide-Ranging 3-1/2 Digit Display

### Description

The V565 is a loop-powered digital process indicator which derives its power entirely from the 4-20mA or 10-50mA signal being measured. No local power is required at the point of measurement.

The 3-1/2 digit, 0.8" high Liquid Crystal Display (LCD) provides clear visibility up to a distance of 30 feet, and can be easily calibrated to the required range. Zero and fullscale can be set anywhere between -1999 and 1999. Span can be from 0 to 3998 counts (100 count minimum span).

The V565 provides linear and square root operation, permitting direct flow readings from differential pressure origins (e.g., orifice plates). The V565 is also equipped with selectable direct/reverse display gain. Reverse operation provides a decreasing count with an increasing input. A trailing, dummy, zero allows display readings to  $\pm 19990$ . The decimal point position is switch selectable and can be independently set to any of four positions (1.9.9.9.).

### Application

The V565 is useful in any application requiring a wide-ranging 3½ digit display from a 4-20mA or 10-50mA current source. The enclosure constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; electronics inside the enclosure against ingress of solid foreign objects; harmful effects on the electronics due to the ingress of water (rain, sleet, snow); and the external mechanism(s) remain operable when ice laden. The V565 is ideal for displaying process variables in local and remote areas where line power is not available or impractical.

The V565 is entity approved by FM for intrinsically safe operation in Class I, II, and III, Division 1 & 2 hazardous locations when installed per manufacturer's drawing 790-0029-00.

The V565 is also intrinsically safe per CSA for operation with the following housings when installed per manufacturers drawing 790-0025-00: panel housing: Class I, Groups A, B, C and D; conduit housing: (Opt C) Class I, Groups A, B, C and D. Class II, Groups E, F and G. Class II, Groups E, F and G.t.

### Loop Drop of 1 Volt

The supply requirement of model V565 is only 1.0 volt on a 4-20mA current loop. This is beneficial in applications where intrinsic safety barriers are used and voltage compliance is at a

premium. The V565 can provide an extra 3-5 volts of loop drive above standard loop-powered indicators.

### Options

- C** Conduit housing, allows internal mounting of Transpak T700 series 2-wire transmitter, includes external mounting bracket.
- C620** Factory calibration; specify range
- U** Urethane coating of internal circuitry for additional protection from corrosive atmospheres

### Display Configuration

The V565 is easily configured using the switches and potentiometers on the display board. To configure the unit, refer to the function switches diagram below.

1. Set jumpers W1 & W2 to "Normal" or "Reverse" for direct or reverse count, respectively.
2. Set switch S2 for the correct current input: "Linear" for linear operation and "Square Root" for square root operation.
3. Set switch S1 accordingly to obtain the desired zero and span count values.
4. Fine tune the display using the "Display Zero" and "Display Span" trim pots. Use table 1 for square root display configuration. Display readings calibrated for either 4-20mA or 10-50mA linear scaling will maintain calibration within 1% if switched to the other range. If readings are inaccurate, the input amplifiers may require adjustment. See Factory Calibration.

*Note: Span refers to counts from minimum to full-scale input.*

**Eurotherm**®

## Calibration

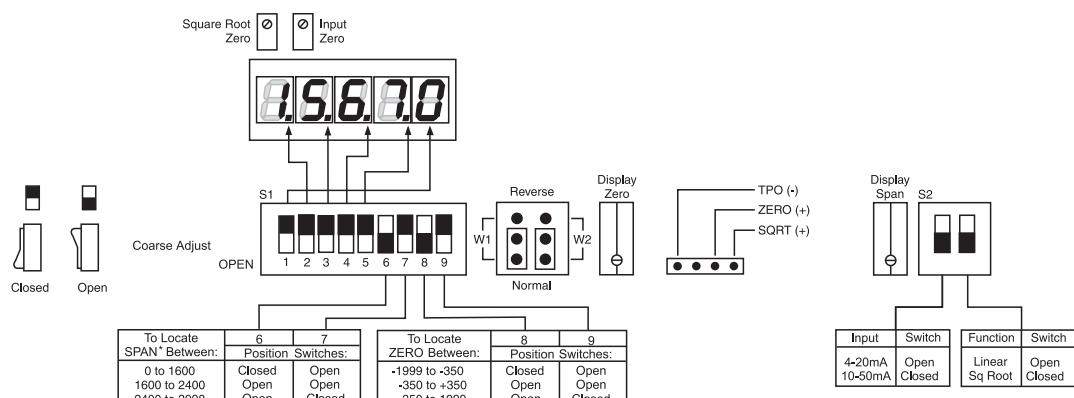
The V565's input and square root zero amplifiers are pre-calibrated at the factory (4-20mA). For best accuracy, the input amplifiers should be recalibrated when the square root function is selected or the current input is changed (10-50mA). Perform recalibration at an ambient temperature of 20-30°C (68-86°F).

1. Connect DVM (-) to "TP0" (gnd) of plug P1 and (+) to "ZERO" and "SQRT" for zero and square root calibration, respectively.
2. Apply 4.000mA or 10.000mA to the input. Set S2-1 accordingly.
3. Adjust the "Input Zero" and "Square Root Zero" potentiometers until the DVM reads 0.000 volts (Zero:  $\pm 0.0005V$ ; Sqrt:  $\pm 0.001V$ ). Note that Input zero must be calibrated first.

Remove the DVM leads from P1 before configuring the display or errors may occur.

## Function Switches

Example shows the V565 configured for a 4/20mA input range and linear display (switch S2), normal count direction (W1/W2), a span between 2400 and 3998 counts (switches 6&7), and zero between 350 and 1999 counts (switches 8&9).



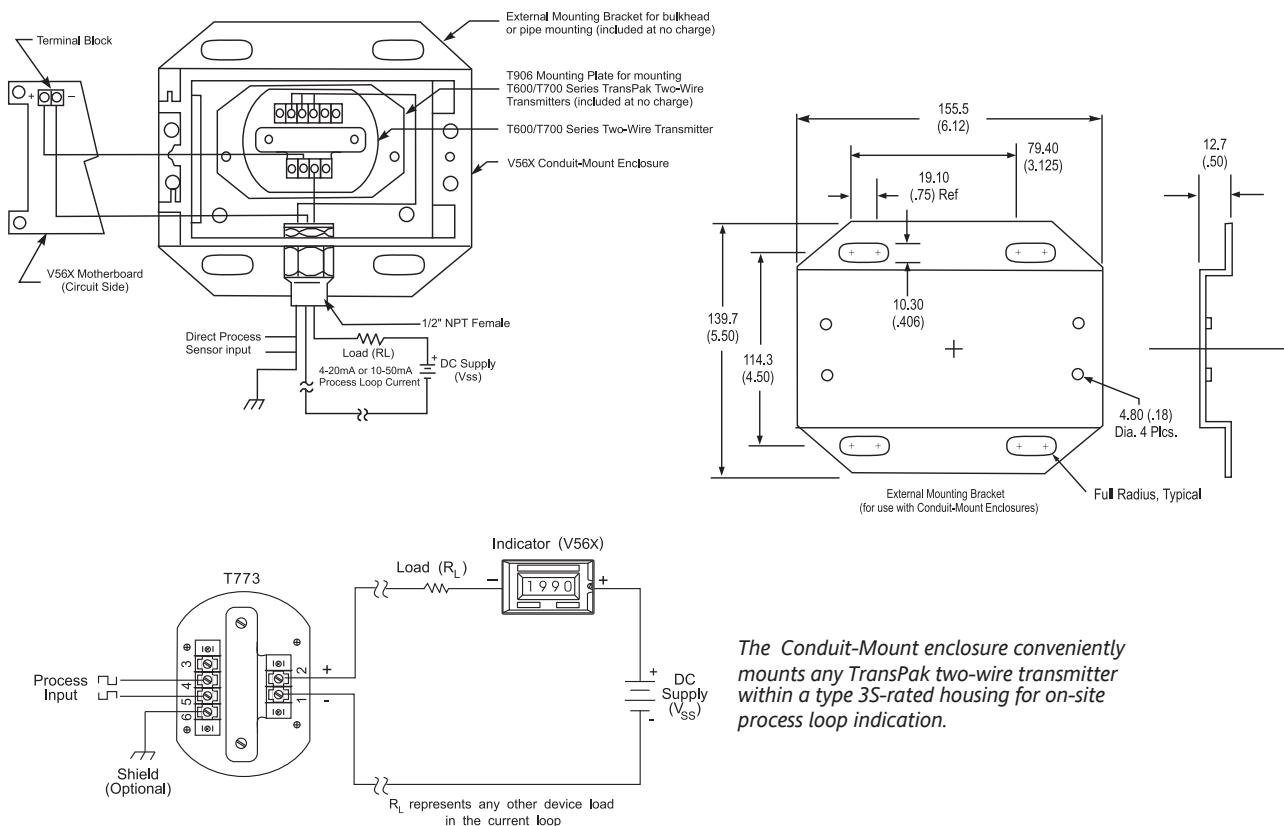
## Square Root Display Configuration

	Input		Display		
	%	4-20mA	10-50mA	%	0-1000
0%	4.000mA	10.000mA	0%	0	
1%	4.160mA	10.400mA	10%	100	
25%	8.000mA	20.000mA	50%	500	
100%	20.000mA	50.000mA	100%	1000	

1. Calibrate the input amplifiers (see Calibration).
2. Set the input to 4.000mA or 10.000mA and trim the Display Zero for the desired minimum display value.
3. Set the input to 20.000mA or 50.000mA and trim the Display Span for the desired maximum display value.
4. Set the input to 25% of span. Verify the display count using the table above. Correct by adjusting the Display Zero and repeating steps 3 & 4 as necessary.
5. Set the input to 1% of span. Verify the display count using the table above.
6. Correct by adjusting the Square Root Zero and repeating steps 3-5 as necessary.

### Connection Diagram, Option C

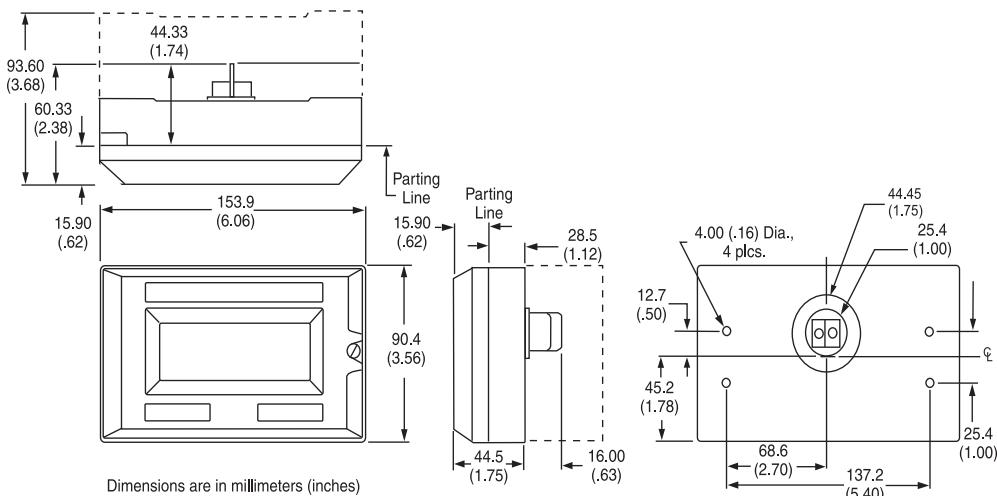
Conduit-Mount Enclosure (front door removed) showing internally mounted TransPak two-wire transmitter.



### Mounting Enclosures

The following dimension drawing shows both the panel mount (thin case) and the conduit-mount enclosures. The conduit mount is represented by a dotted line in the top and side views only. The front and back view dimensions are the same for both enclosures.

Note: panel mount includes an attached gasket surrounding the terminals, providing a seal to the panel and the 1" diameter cutout. Four screws should be used to ensure a tight, flush fit between the panel and the V565.



## Specifications

### Input Current Ranges:

4-20mA and 10-50mA, switch selectable

### Input Current Limits:

Minimum: 3mA

Maximum: 220mA (Fuse)

### Input Voltage Drop:

4-20mA: 1 volt max. @ 20mA

10-50mA: 1.4 volt max @ 50mA

### Power Consumption:

2.5mW maximum @ 3.5mA input

### Display Reading Update

2 readings per second

### Readout Display:

Type: 0.8" High Liquid Crystal, 3-1/2 digit (1999)  
Decimal Point Indication: Switch-selectable, four positions 1.9.9.9.

Dummy Zero: Switch-selectable trailing zero, e.g., 19990

Direction: Jumper-selectable,

Underrange (below -1999): displays -1  
Overrange (above +1999): displays 1

### Display Calibration:

Zero (4mA/10mA):

Adjustable from -1999 to 1999

Span (20mA/50mA):

Adjustable from 0 to 3998

### Accuracy (@ 25 ±5°C):

Linear: <±0.1% of span counts, ±1 count.

Square-Root: <±0.1% of span counts, ±1 count (from 1% to 100% of span)

### Ripple Rejection:

1 count error with 1mA p-p ripple @ 50Hz

### Screws (V565/V565C):

Front Panel: 10-32, brass with corrosion resistant stainless steel plating:

MIL-W-52263C (MR)

Rear Electrical: 6-32, nickel plated brass

### Terminals:

Standard: 6-32 screw (accepts 0.2" ring lug)  
Conduit mount (Opt C): Screw clamp,

12 AWG wire gauge, max.

### Temperature Coefficient:

#### (Std Calibration: -10 to 70°C; Linear mode):

Zero: ±0.1 counts/°C, ±1 count, typical.

±0.2 counts/°C, ±1 count, max.

Span (1000 to 3998): ±150ppm/°C,

±1 count, max.

Span (100 to 999):

150ppm/°C + .95(1000 - Span), ±1 count, max.

### Temperature Coefficient (Square-root):

Equivalent to 1uA/°C max. input drift

### Temperature Range:

Standard: -10 to 70°C (14 to 158°F)

Storage: -55 to 80°C (-67 to 176°F)

### Humidity (with conformal coat @25°C):

5 to 95% RH, non-condensing

### Weight:

V565: 15 oz.

V565C: 2.2 lbs.

### Agency Approval:

FM approved intrinsically safe for hazardous locations, certificate No. FM17US0096.

CSA approved intrinsically safe for hazardous locations, (File No.LR422272-45). Contact factory for installation drawings.

### FM Entity Parameters:

Type 3S, T4, -10°C < Ta < +70°C

Vmax=33V

Imax=178.5mA

Ci=0mF

Li=0mH

## Ordering Information

### Specify:

1. Model: **V565-0000**
2. Options C, U

**Eurotherm**  
by Schneider Electric

