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INPUT CONFIGURATION

The type of input is factory-set upon request but can later be modified by changing the value of the resistor R1 connected at the input option.

Input 0-1mA: R1 = 1000 ohm + jumper J1

Input 0-5mA: R1 = 200 ohm + jumper J1

Input 0-20mA: R1 = 50 ohm + jumper J1

Input 4-20mA: R1 = 50 ohm + jumper J1

Voltage inputs are determined according to the process of display range configuration. In such a case eliminate the solder jumper J1.

The excitation is jumper-selectable:

Common excitation / 2 or 3 wire connection

Exc. = 24V : J2(1-2) + J4 + J5(2-3)

Exc. = 6V : J2(2-3) + J4 + J5(2-3)

Exc. = 5V : J2(2-3) + J3 + J4 + J5(2-3)

Floating excitation / 4 wire connection

Exc. = 24V : J2(1-2) + J5(1-2)

Exc. = 6V : J2(2-3) + J5(1-2)

Exc. = 5V : J2(2-3) + J3 + J5(1-2)

RANGE CONFIGURATION

Model 816S XYC9 process indicators provide internal plug-in jumpers to allow easy scaling for readout any process variable directly in engineering units.

Calculate the values of N (gain) and P (zero offset) by following the process described next page and find out in tables (1) and (2) the adequate jumper wiring of groups S1 to S5.

Once the required range has been setup, recalibrate the instrument by applying a known signal (approximately full-scale) and adjusting zero and span potentiometers.

TABLES OF CONFIGURATION

TABLE (1) GAIN

-N-	S3	S4	-N-	S3	S4
3618	-	J1/2	400	-	-
3224	-	J1/4	364	J2	J1
2939	-	J3	288	J3	-
2406	-	J2	212	J3/4	-
2012	-	J1	145	J2	-
1810	J4	J1/2	110	J2/3	-
1612	J4	J1/4	96	J2/3/4	-
1470	J4	J3	70	J1	J1/2/3/4
1203	J4	J2	58	J1	J1/2/3
1006	J4	J1	46	J1	J2/3
800	-	-	37	J1	J1/2
724	J3	J1	30	J1	J3
637	J3/4	J2	24	J1	J2
532	J2	J3	20	J1	J1
450	J2/4	J3	8	J1	-

TABLE (2) ZERO OFFSET

-P-	S1
-2000 a -1230	J1/2
-1229 a -615	J1
-614 a -150	J2
-150 a +150	-
+150 a +614	J3
+615 a +1229	J4
+1230 a +2000	J3/4

Note: The values of N given in the table are absolute and must be applied having no regard to the sign obtained in calculation.

JUMPER CONFIGURATION

JUMPER S5 (SIGN OF GAIN)

For $N > 0$, plug in jumpers ad+bc

For $N < 0$, plug in jumpers ab+dc

JUMPERS S3 Y S4 (GAIN)

Place the appropriate jumpers according to the absolute value of N in table (1). If an intermediate value of the table is obtained, take the nearest one.

JUMPERS S2 (SPAN POTENT. MARGIN)

It is normally factory-set in the J1 position. In case that, after the board configuration, the span adjustment margin is located at one end of the potentiometer, place the jumper S2 in the J2 position thus increasing the margin.

JUMPERS S1 (ZERO OFFSET)

Plug in the appropriate jumpers so that the value of P (with its sign) is comprised between the margins indicated in table.

CONFIGURATION PROCEDURE

Consider **VSE** as the maximum value and **VIE** as the minimum value of the input signal, in volts. $VSE - VIE = 1$ (for input options 0-1mA, 0-5mA, 0-20mA)

$VSE - VIE = 0.8$ (for 4-20mA)

GAIN CALCULATION

Apply the formula:

$$N = (VSD - VID)/(VSE - VIE)$$

Where **VSD** is the display value corresponding to the top of the input signal (VSE) and **VID** is the value corresponding to the bottom of the input signal.

The display value must be taken with its sign and disregarding decimal point, that is; a display of 100.0 shall be considered in calculation as 1000.

ZERO OFFSET CALCULATION

For current inputs and **N > 0**:

$$P = VSD - N$$

For current inputs and **N < 0**:

$$P = -(VSD - N)$$

For voltage inputs and **N > 0**:

$$P = VSD - N \cdot VSE$$

For voltage inputs and **N < 0**:

$$P = -(VSD - N \cdot VSE)$$

(VSD and N with its corresponding sign).

With these obtained values of N and P, find out in tables (1) and (2) the appropriate jumper wiring for the groups S1, S3 and S4.

EXAMPLES OF CONFIGURATION

1./ It is required to have a display readout from -10.0°C to +200.0°C

corresponding to a standard input of 4-20mA.

$$VSD = 2000$$

$$VID = -100$$

Gain:

$$N = (2000 - (-100)) / 0.8 = 2625$$

Zero Offset:

$$P = 2000 - 2625 = -625$$

For **N = 2625** (positive), the nearest value listed in table (1) is 2406; plug in the jumper **J2 in S4 and none in S3**

For **P = -625** plug in the jumper **J1 in S1** according to table (2).

2./ With a standard input span form 0 to 10V, it is required to obtain a display span form 50.0°C a 150.0°C.

$$VSD = 1500$$

$$VID = 500$$

Gain:

$$N = (1500 - 500) / 10 - 0 = 100$$

Zero Offset:

$$P = 1500 - 100 * 10 = 500$$

For **N = 100** (positive) plug in the jumpers **J2, J3 and J4 in S3 y ninguno en S4** according to the table (1) (the nearest value is 96). Place also the jumpers **(ad+bc) of group S5**.

For **P = 500** plug in the jumper **J3 in S1** according to the talbe (2).

NOTE: With 0-100mV input, the value of N may exceed from 4000. In such a case, replace R2of 330kohm for a resistor whose value is obtained from this formula:

$$R2 \text{ (kohm)} = (50000/N)$$

Place also the jumper J1 in S4 and no one in S3. For the rest of the configuration, follow the normal process.

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