CD148
Carrier Demodulator Module

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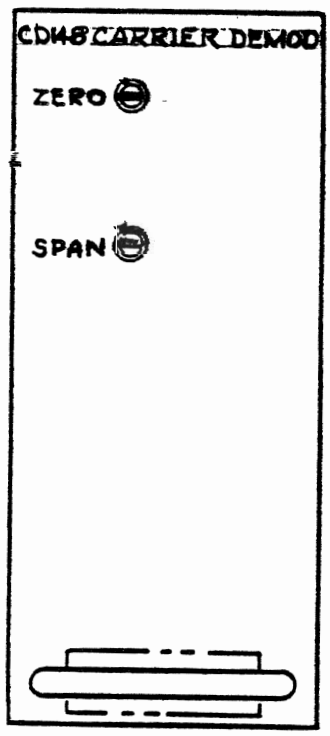
Validyne ENGINEERING CORPORATION

CD148

Carrier Demodulator

1.1 Description:

The Model CD148 is a low cost Carrier Demodulator Plug-In Module to the Module Case. It is used to demodulate the output of linear variable differential transformers. The CD148 will produce a ± 10 volts DC signal from LVDT Transducers with outputs between 200 and 1000 mv per volt, when excited by the 5 volt 3kHz carrier in the MC1 Module Case. The standard frequency response for the Model CD148 is 0 to 200 hz with less than 10mv of ripple on the 10 volt DC output.



1.2 Electrical Specifications

Output A: ± 10 volts DC

Output B: ± 10 volts DC

Output impedance less than 10 ohms

Output Current:

A: 10ma

B: 0.5ma short circuit

Non-Linearity:	±0.05% full-scale maximum
Frequency Response:	0 to 200 Hz ± 10%
Temperature Range:	0°F to 160°F
Zero Shift:	0.005% per °F
Span Shift:	0.01% per °F
Zero Control Range:	±125mv per volt
Span Control Range:	200mv/v to 1000mv/v for 10 volts DC output

1.3 Input & Output Connections:

Transducers are connected to the Model CD148 through the WK4 connector the rear panel of the MC1 Module Case.

Pin Connections are:

Pin 1 - Carrier Excitation (Brown Lead)
2 - Transducer Return Signal (Red Lead)
3 - Transducer Return Signal (Black Lead)
4 - Carrier Excitation (Yellow Lead)

The wiring diagram for all transducer leads is shown in Figure 1.1 on the next page.

1.3 Input and Output Connections: (Cont.)

Output signals come from the XLR-3 connectors on the rear panel of the MC1 Module Case. Connections for both outputs are the same.

Pin 1 - output

2 - system ground

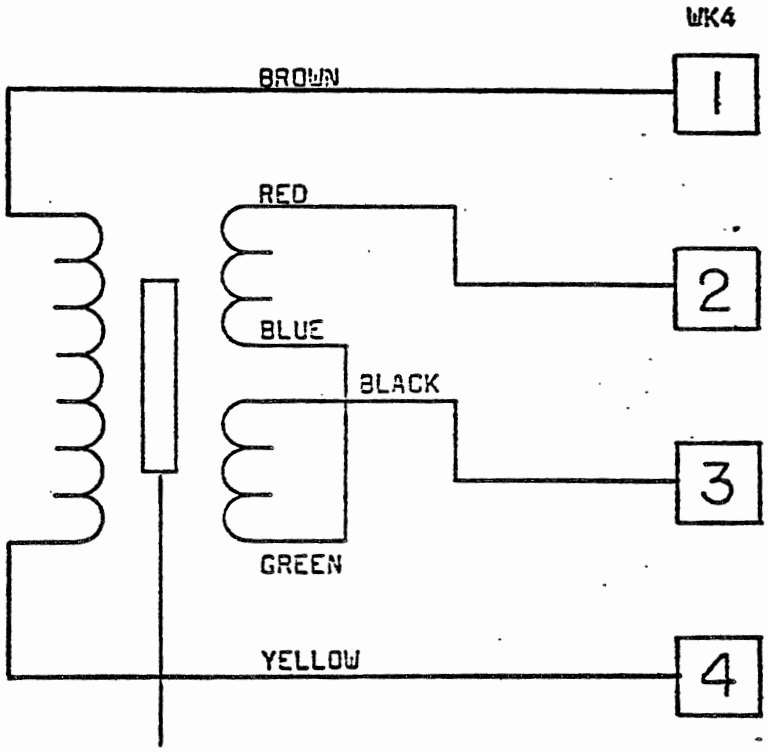
3 - chassis ground

1.4 Mechanical Specifications:

Width - 1.6 inches

Height - 3.7 inches

Weight - less than 7 ounces



Core motion toward leads is plus output from CD148.

Figure 1.1

Transducer Wiring Diagram

Schaevitz LVDT to CD148 Input

Section 2

2.1 Installation & Operation

Model CD148 may be plugged into or out of the MC1 Module Case, while the power is on. Transducers are connected to the module case as shown in the accompanying drawing. With zero stimulus on the transducer, the output may be adjusted to zero volts with the 15-turn screwdriver adjusted zero control. With full-scale stimulus on the transducer, the output may be adjusted to 10 volts with 15-turn screwdriver adjusted span control. The resolution on both controls is at least .01% of full-scale.

2.2 Output Filter

The standard output filter on the Model CD148 provides a frequency response of 0-200 Hz.

SECTION 3

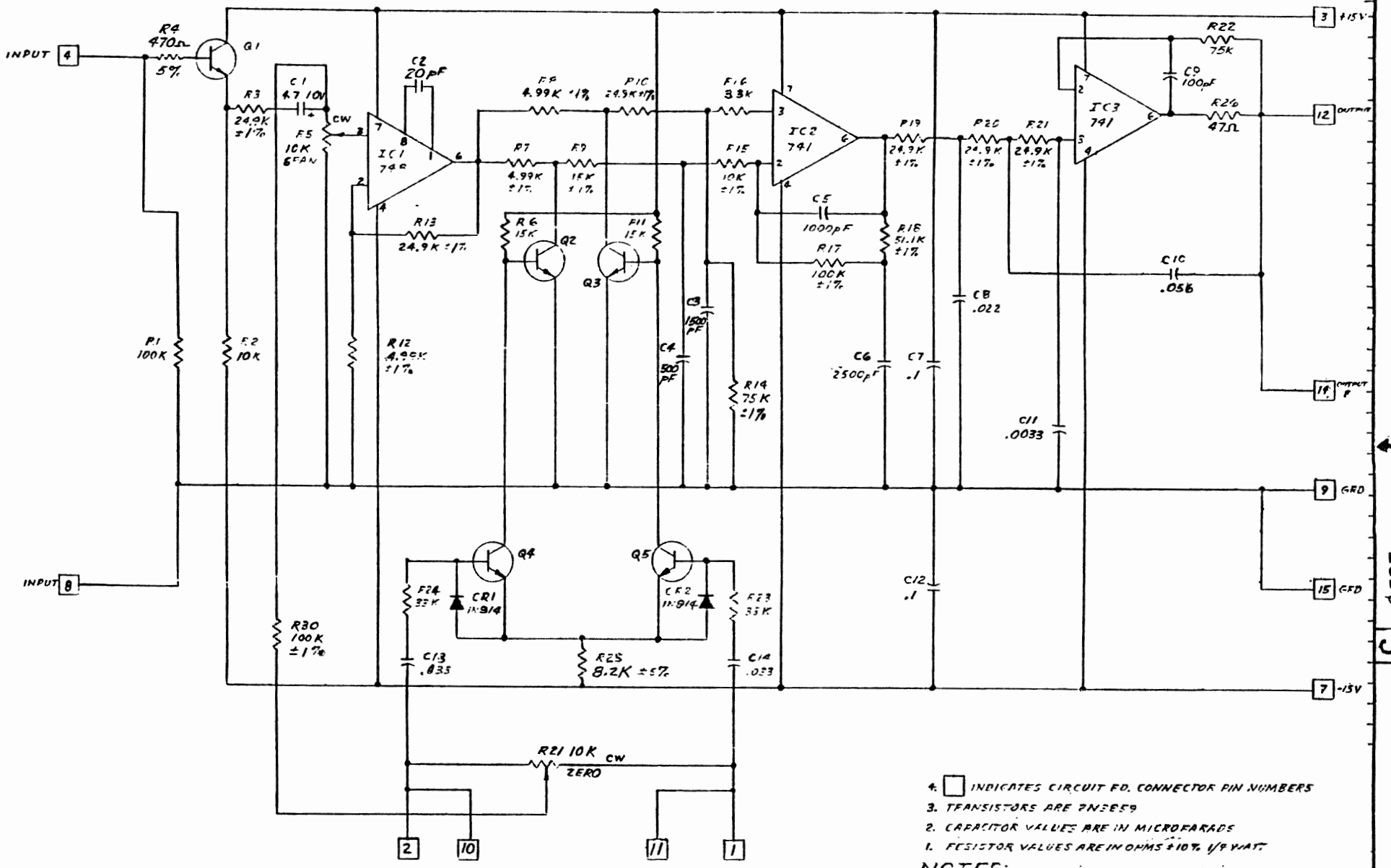
PRINCIPLES OF OPERATION

3.0 Principles of Operation

The Model CD148 Carrier Demodulator balances, amplifies, demodulates and filters signals from Miniature L.V.D.T. The output from a transducer is fed into a unity gain buffer amplifier (Q1) where it is summed with the output from the zero potentiometer (R30). Any residual output from the transducer may be nulled-out by adjusting the zero control. The transducers signal then goes through the span potentiometer (R5) into the feedback amplifier (IC1). The AC output of IC1 goes to the demodulator, which routes the transducer signal, on one-half of the carrier cycle, to the inverting input of a differential amplifier (IC2), and to the non-inverting input on the other half of the carrier cycle. This differential amplifier is connected as a low pass active filter to reduce the ripple on the demodulated transducer signal. This demodulated signal is fed into a second amplifier (IC3) which is connected as a unity gain low pass active filter to remove more of the carrier ripple and to determine the output frequency response.

8597

REVISIONS				
SYM		DESCRIPTION	DATE	APPROVED
A		SCR DCN	3-5-75	CL



4. ☐ INDICATES CIRCUIT BD. CONNECTOR PIN NUMBERS
3. TRANSISTORS ARE 2N3859
2. CAPACITOR VALUES ARE IN MICROFARADS
1. RESISTOR VALUES ARE IN OHMS ±10% 1/8 WATT

NOTES: UNLESS OTHERWISE SPECIFIED.

HIGHEST REF DES USED							
CR4	CR3	IC3	Q5	R31			

REF DES NOT USED
R27, R28, R29

TOL. UNLESS NOTED
DEC. XX±
FRAC. & DEC. XX
ANGLES ±½°
DIAMETERS WITH BASIC ℄ SHALL BE CONCENTRIC WITHIN .005 TIR.
SURFACES MUST BE FLAT WITHIN .002 PER IN.
MAX FILLET .015 UNLESS NOTED.
DEBURR EDGES .005 MAX UNLESS NOTED.
SURFACE FINISH 63 UNLESS NOTED.
DRILLED HOLE TOL. PER ANDI03987.

Validyne ENGINEERING CORPORATION
NORTHRIDGE, CALIFORNIA 91324

SCALE		MODEL	CD148
DWN	ED 4-30-75	MAT'L	
CK'D	[illegible] 1-7-75	FINISH	
APPVD.			

TITLE: SCHEMATIC - CARRIER DEMODULATOR PLUG-IN

C 8597

WARRANTY

VALIDYNE ENGINEERING CORPORATION warrants equipment of its own manufacture to be free from defects in material and workmanship under normal conditions of use and service.

VALIDYNE will repair or replace any component found to be defective on its return to VALIDYNE within the time specified below:

1. Pressure Transducers and Pressure Transmitters (including transducers supplied as part of Digital Manometer Systems) within three (3) years of its original purchase.
2. Electronic products (Transducer indicator, carrier demodulators, plug-in signal conditioners, module cases, etc.) within one (1) year of its original purchase.

Buyer is requested to secure authorization of VALIDYNE, and to describe defect prior to return of equipment under warranty. Shipment to VALIDYNE shall be at Buyer's expense, with return at VALIDYNE's expense. NON-VERIFIED problems or malfunctions whether warranty or not are subject to a $80.00 evaluation charge.

The warranty carries no liability, either expressed or implied, beyond our obligation to repair or replace, at VALIDYNE's option the unit which carries the warranty to the original purchaser. Prices, specifications and designs subject to change without notice. This warranty is void if the product is subjected to misuse, accident, neglect or improper application, installation or operation.

REPAIR POLICY

Units returned to VALIDYNE for repair which are not under warranty will be subject to the following conditions.

1. A description of the problem or malfunction shall accompany the unit returned for repair, or be communicated to VALIDYNE prior to shipment. Otherwise there will be a minimum evaluation and/or calibration charge of $80.00.
2. Unit will be repaired automatically if charge is less than 65% of current list price unless other specific instructions are received. Above 65%, VALIDYNE will request authorization by buyer.
3. If quotation is required before proceeding with repairs, unit should be accompanied by paper so stating, or information communicated to VALIDYNE prior to shipment.
4. Buyer is to secure authorization and shipping method from VALIDYNE prior to return of equipment or shipment will be rejected. (Applies to Canada only)

REPAIR WARRANTY

Warranty coverage on repairs is 90 days on work done, or to the end of the original warranty period, whichever is longest.

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