AVG Automation

AUTOTECH CONTROLS

UTICOR

Dual Resolver Decoder

(DM2-DTRAK-0X)

Instruction & Operation Manual

Sales and Marketing ▼
343 St. Paul Blvd.
Carol Stream, IL 60188
Tel: (630)668-3900
FAX: (630)668-4676

Factory Customer Service/Order Entry ▼
4140 Utica Ridge Rd.
Bettendorf, IA 52722
Tel: (319)359-7501
(800)711-5109
FAX: (319)359-9094

Application Hotline
1 (800) TEC-ENGR (832-3647)

Vist our web site at: www.avg.net

MAN-DM2-DUAL
REV 01 11/03/99

Dual Resolver Decoder

Model DM2-DTRAK-0X

- Decoder for dual resolver
- Field selectable 16:1, 32:1, 64:1 or 128:1 gear ratio
- Field selectable Binary, BCD or Gray Code output
- 1024 counts per turn (1000 in case of BCD)
- Short circuit proof resolver interface
- Broken resolver cable indication
- PNP sourcing, NPN sinking or TTL outputs
- Short circuit protected outputs and output shorted indicator (only with P & N type of outputs)
- Field selectable PC Handshake or transparent operation

Description

Autotech's Dual Resolver Decoder model DM2-DTRAK-0X is a snap track mounted dual resolver decoder especially designed for OEMs. The unit can be ordered with PNP sourcing, NPN sinking, or with TTL type of outputs, and operates from 11–28 VDC input power. The standard unit supports gear ratios of 16:1, 32:1, 64:1 and 128:1 between fine and coarse resolvers. The decoder provides BCD, Binary or Gray code outputs. The outputs are updated transparently or by an external data transfer input. The gear ratio, output code and the output update method are field selectable by a dip switch.

The unit has built-in diagnostics for broken resolver cable and for shorted outputs (P and N outputs only). Two LED indicators provide positive indication of a properly working unit. The resolver interface is short circuit proof.

Specifications

Input power: 11–28 VDC, 6 W
Operating temperature: –10 to +130 °F
Position transducer: AutotecH's RL210 dual resolvers
Maximum cable length between resolver and DM2:
2500 feet
Standard gear ratios:
Field selectable 16:1, 32:1, 64:1 and 128:1
Output formats: Field selectable BCD, Binary or Gray
Output type:
P: PNP sourcing
Logic True: Transistor ON, 1.7V drop @100 mA
Logic False: Transistor OFF, 0.2 mA leakage @ 50VDC
N: NPN sinking
Logic True: Transistor ON, 1.1V drop @100 mA
Logic False: Collector open, 0.1 mA leakage @ 50VDC
T: TTL output
Logic True: –3.00 mA max
Logic False: 24.0 mA max

OUTPUT DATA UPDATE:
SWITCH selectable between transparent and PC Handshake

PC Handshake:
Edge triggered (Low to high as well as high to low); 30 µsec minimum strobe width; The data is stabilized within 100 µsec of any triggering edge, and remains frozen until next triggering edge comes in.
Transparent:
Output data is continuously updated. The data is latched for 100 ± 10 µsec within 30 µsec of a transition at data transfer input.
Data transfer input:
10–28 VDC input

How to Order

1. Decoder

DM2-DTRAK-0x Dual resolver decoder, snap track mounted, for 16:1, 32:1, 64:1, and 128: 1 gear ratios (Consult factory for any other gear ratio)

Where **x** is:

P: PNP sourcing outputs
N: NPN sinking outputs
T: TTL outputs

2. Resolver

SAC-RL210-Gxxxy Dual resolver with xxx:1 gear ratio between fine and coarse resolvers (Standard Decoder supports following values for xxx 016, 032, 064 and 128)

Where **xxx** is:

016: 16:1 gear ratio
032: 32:1 gear ratio
064: 64:1 gear ratio
128: 128:1 gear ratio

Where **y** is:

M: MS connector on resolver for connections
Blank: Terminal blocks on resolver for connections

3. Cables

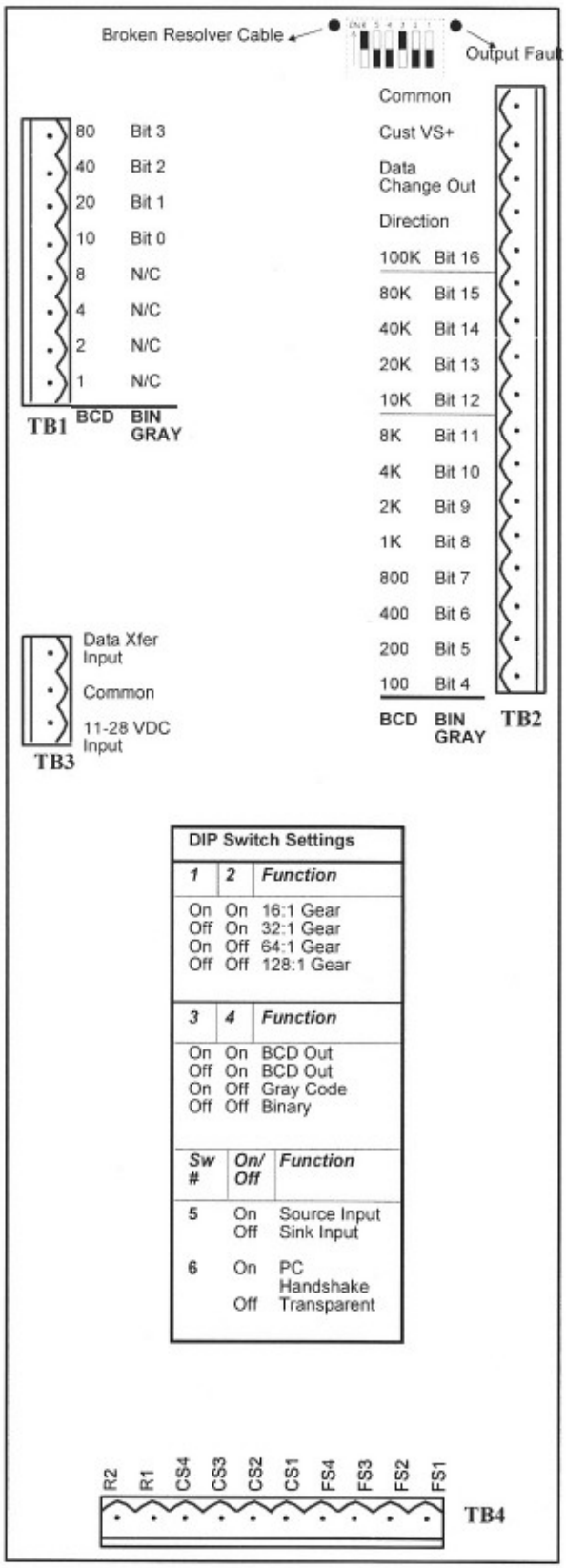
CBL-RL210-Mxxx 22AWG, 10 conductor(5 twisted pairs), overall foils shielded cable with 19 pin military connector on one end for mating with MS connector on RL210 resolver.

CBL-10T22-Cxxx 22AWG, 10 conductor (5 twisted pairs), overall foils shielded cable without connector for wiring terminal block on RL210 resolver.

CBL-29S22-Cxxx 29 conductor overall foil shielded cable for connecting digital outputs from decoder to external devices.

Installation and Wiring

Wiring Diagram



DIP Switch Settings

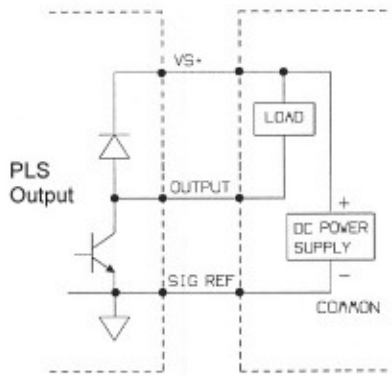
1	2	Function
On	On	16:1 Gear
Off	On	32:1 Gear
On	Off	64:1 Gear
Off	Off	128:1 Gear

3	4	Function
On	On	BCD Out
Off	On	BCD Out
On	Off	Gray Code
Off	Off	Binary

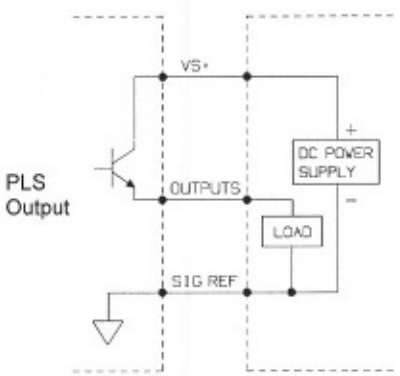
Sw #	On/ Off	Function
5	On	Source Input
	Off	Sink Input
6	On	PC Handshake
	Off	Transparent

Output Configurations and Load Wiring

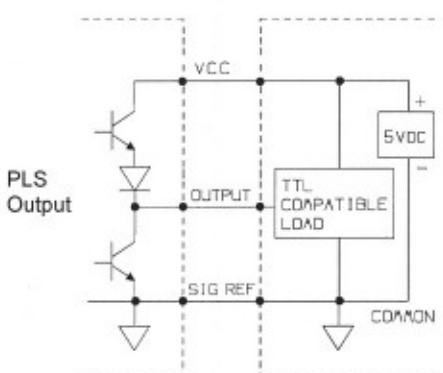
N Type of Output



P Type of Output



T Type of Output



Wiring Table for Dual (Multi-turn) Resolvers

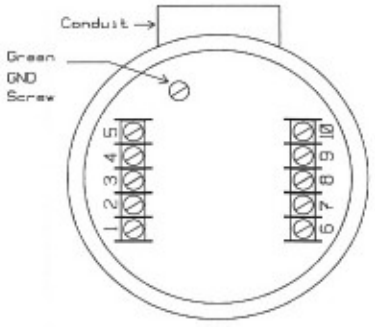
SAC-RL210, E8R-RL210

CBL-10T22-Mxxx Wire color	*Function*	*Resolver Terminal*	*MS Connector Pin #*
Black/Green	Rotor R1	1	A
Green	Rotor R2	2	B
Black/Yellow	Coarse Stator CS1	3	C
Yellow	Coarse Stator CS3	5	E
Black/White	Coarse Stator CS2	4	D
White	Coarse Stator CS4	6	F
Black/Red	Fine Stator FS1	7	H
Red	Fine Stator FS3	9	L
Black/Blue	Fine Stator FS2	8	K
Blue	Fine Stator FS4	10	M
Shield		GND (Green)	S

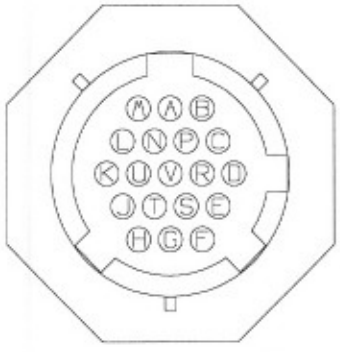
Notes:

1. Black/Green indicates a black wire with green stripes
2. MS connector: MS3112E-14-19P;
   Mating connector: MS3116F-14-19S (Autotech part # ECM-19REC-ITT)
3. MS connector is not available with E8R series

Terminal Block on a Dual (multi-turn) Resolver



MS Connector on a Dual (multi-turn) Resolver



Grounding and Shielding

1. Resolver wiring must be done using twisted pairs in cable with an overall foil shield. The twisted pairs must be wired as per wiring instructions. See *How to Order* section for suitable cable offered by Autotech.

2. It is recommended that the shielded resolver cable be routed in its own conduit or cable tray.

3. All shielded resolver cable must be kept at a minimum distance of 2 inches from all high voltage or inductive wiring.

4. All shielded resolver cable must be kept at a minimum distance of 12 inches from all motor wiring controlled by AC or DC drives.

5. All ground planes (chassis grounds) in the total system must be held to the same RF potential, by good metallic connections to building frames, conduit or wiring trays.

6. **The shield drain** wires may be terminated in one of two ways:

   a) Connect to chassis ground at each end and not connected to signal reference at any point in the system.
   b) Connect to signal reference at the decoder only. The shield drain should remain unconnected at the resolver end and the shield should not touch earth ground at any point in its run.

   NOTE: Resolvers with MS connectors have shield drain wire pre-terminated for method a).

   Method a) is recommended for all Autotech products. In certain circumstances, in unusual EMI conditions, method b) may be necessary after consulting factory.

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