

# HT\_CC100DC12/24V-C\* Instructions

## Electronic Unit for QDZH25G~QDZH35H Compressors

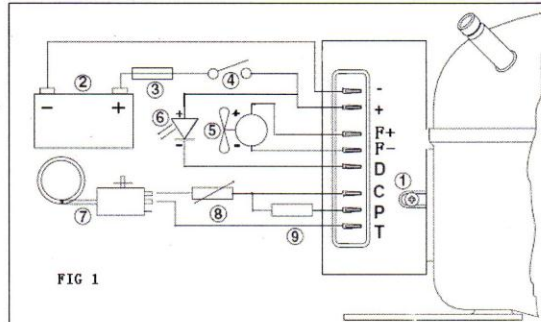


FIG 1

Wire dimensions (table2)

AWG Gauge	Cross section(mm <sup>2</sup> )	Max length* 12V DC		Max length* 24V DC	
		ft.	m	ft.	m
13	2.5	8	2.5	16	5
12	4	13	4	26	8
10	6	20	6	39	12
8	10	33	10	66	20

\*length between battery and electronic unit

Standard battery protection settings (table3)

12Vcut-out V	12V cut-in V	24Vcut-out V	24V cut-in V
10.4	11.7	22.8	24.2

Compressor speed settings (table4)

Motor speed (RPM)	Resistor (8) Ω	C/T current mA
2000	0	5
2100	51	4.8
2200	100	4.6
2300	150	4.4
2400	200	4.2
2500	277	4
2600	330	3.8
2700	400	3.6
2800	490	3.4
2900	586	3.2
3000	692	3
3100	816	2.8
3200	963	2.6
3300	1137	2.4
3400	1331	2.2
3500	1523	2
stop	>3000	

Optional battery protection settings (table1)

Resistor (9) K Ω	12Vcut-out V	12Vcut-in V	12Vmax Voltage	24Vcut-out V	24Vcut-in V	24Vmax Voltage
0	9.6	10.9	17.0	21.3	22.7	35
1.6	9.7	11.0	17.0	21.5	22.9	35
2.4	9.9	11.1	17.0	21.8	23.2	35
3.6	10.0	11.3	17.0	22.0	23.4	35
4.7	10.1	11.4	17.0	22.3	23.7	35
6.2	10.2	11.5	17.0	22.5	23.9	35
8.2	10.4	11.7	17.0	22.8	24.2	35
11	10.5	11.8	17.0	23.0	24.5	35
14	10.6	11.9	17.0	23.3	24.7	35
18	10.8	12.0	17.0	23.6	25.0	35
24	10.9	12.2	17.0	23.8	25.2	35
33	11.0	12.3	17.0	24.1	25.5	35
47	11.1	12.4	17.0	24.3	25.7	35
82	11.3	12.5	17.0	24.6	26.0	35
220	9.6	10.9	17.0	21.3	22.7	35

### Controller specification

The electronic unit is a dual voltage device. This means that the same unit can be used in both 12V and 24V power supply systems. Maximum voltage is 17V for a 12V system and 36V for a 24V power supply system. Max. ambient temperature is 55°C. The electronic unit has a built-in thermal protection which is actuated and stops compressor operation if the electronic unit temperature gets too high.

### Installation(Fig.1)

Connect the terminal plug from the electronic unit to the compressor terminal. Mount the electronic unit on the compressor by snapping the cover over the screw head(1).

#### Power supply(Fig.1)

The electronic unit must always be connected directly to the battery poles (2). Connect the plus to + and the minus to -, otherwise the electronic unit will not work. The electronic unit is protected against reverse battery connection. For protection of the installation, a fuse (3) must be mounted in the + cable as close to the battery as possible. 15A fuse for 12V and 7.5A fuse for 24V circuits are recommended. If a main switch (4) is used, it should be rated to a current of min. 20A. The wire dimensions in Table. 2 must be observed. Avoid extra junctions in the power supply system to prevent voltage drop from affecting the battery protection setting.

#### Battery protection(Fig.1)

The compressor is stopped and re-started again according to the decided voltage limits measured on the + and - terminals of the electronic unit. The standard settings for 12V and 24V power supply systems appear from Table. 3. Other settings (Table. 1) are optional if a connection which includes a resistor (9) is established between terminals C and P.

#### Thermostat(Fig.1)

The thermostat (7) is connected between the terminals C and T. Without any resistor in the control circuit, the compressor with electronic unit will run with a fixed speed of **2,000rpm** when the thermostat is switched on. Other fixed compressor speeds in the range between 2,000 and 3,500 rpm can be obtained when a resistor (8) is installed to adjust the voltage (v) of the control circuit. Resistor values for various motor speeds appear from Table. 4.

#### Fan(optional,Fig.1)

A fan (5) can be connected between the terminals F+ and F-. Connect the plus to F+ and the minus to F-. Since the output voltage between the terminals F+ and F- is always regulated to 12V, a **12V fan must be used for both 12V and 24V power supply systems**. The fan output can supply a continuous current of **0.5A<sub>avg</sub>**. A higher current draw is allowed for 2 seconds during start.

#### LED(optional,Fig.1)

A 10mA light emitting diode(LED)(6) can be connected between the terminals + and D. In case the electronic unit records an operational error, the diode will flash a number of times. The number of flashes depends on what kind of operational error was recorded. Each flash will last 1/5 second. After the actual number of flashes there will be a delay with no flashes, so that the sequence for each error recording is repeated every 1 minutes.

Table 5

Number of flashes	Error type
1	Battery protection cut-out(The voltage is outside the cut-out setting).
2	Fan over-current cut-out(The fan loads the electronic unit with more than $I_{Apeak}$ ).
3	Motor start error(The rotor is blocked or the differential pressure in the refrigeration system is too high(>6bar)
4	Minimum motor speed error (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed 1850 rpm or controller cannot find the rotor position ).
5	Thermal cut-out of electronic unit(If the refrigeration system has too heavily loaded,or if the ambient temperature is high, the electronic unit will run too hot (case temperature>75° C) .
6	Controller hardware failure (Controller detects abnormal parameters).

notes:

1. Power controller, please read the manual; and check the connection is correct, incorrect connection may damage controller;
2. Controller can not be greater than the value of the input voltage DC 36V.

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