

无锡迪富电子有限公司

Wuxi Denvel Electronics Co., Ltd

REVISION

Customer :

Product ID : DH-0357

CUSTOM ID : RC403/HQN

Product name : Remote

Date : 2010.07.05

APPROVE NEDIS		BY
PEG	QAG	PCG

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1.0 PURPOSE:

The purpose of this specification is to define a multi-key remote control intended to operate a TV IRD unit.

2.0 SCOPE:

This specification defines the physical, electrical, mechanical and functional requirements of the remote control.

3.0 APPLICATION:

This specification shall be used for engineering qualification, and incoming acceptance by NEDIS.

4.0 APPLICABLE DOCUMENTS: NEDIS Specifications

28-3612	Wear and Durability Requirements
28-3620	Product Reliability Test Procedures
47-419	Engineering Qualification Procedures
47-435	General Packaging Requirements
47-444	Conductive Rubber Keypad Qualification
47-712	Zero Defect Quality Program
47-812	General Engineering Specifications for Transmitters

5.0 DEFINITIONS:

6.0 REQUIREMENTS:

6.1 Engineering Qualification:

Each new design must meet all requirements and qualification tests outlined in this specification.

6.1.1 Sample Submission: Ten samples are required for qualification testing.

6.1.2 Samples submitted to NEDIS for qualification shall be accompanied by test data indicating the range of compliance to this specification.

6.1.3 In the event the first submission results in rejection resubmission of samples and data by NEDIS may be requested.

6.2 Finished Product:

Each lot of product must conform to requirements stated in Section 7.0 of this specification. NEDIS reserves the right to evaluate each lot for conformance to specification to determine lot acceptance.

7.0 Dimensional and Appearance: (continued)

- The tolerances on inspected dimension are as follows:

Dimension	Tolerance
Up to 1	± 0.06
>1, ≤6	± 0.10
>6, ≤18	± 0.15
>18, ≤50	± 0.20
>50, ≤120	± 0.30
>120, ≤250	± 0.40

- The component color breakdown is:

COLOR BREAKDOWN NEDIS PART NUMBER RC403/HQN	
CASE COLOR	MOLDED -PANTONE #422 C
ALL BUTTONS EXCEPT AS NOTES	PANTONE#COOL GREY 10 C LETTERING: WHITE
FEATHEER KEY(INCLUDE 11KEYS)	PANTONE #652 C
POWER	RED -PANTONE #173 C
MUTE	GREEN -PANTONE#5545 C
BUTTON "F1"	RED -PANTONE #173 C
BUTTON "F2"	YELLOW -PANTONE#3965 C
BUTTON "F3"	GREEN -PANTONE#5545 C
BUTTON "F4"	BLUE -PANTONE#300 C
OVERLY PVC	PANTONE#429 U
PVC COLOR LUMP	PANTONE#COOL GREY 10 C LETTERING: WHITE
LOGO	PANTONE WHITE C PANTONE BLACK C

7.1 Key Location and Identification

Function	Code	Lead code	Function	Code	Lead code
MUTE	0D	00		3F	00
POWER	0C	00		3C	00
1	01	00		2E	00
2	02	00		35	00
3	03	00		29	00
4	04	00		2B	00
5	05	00		2C	00
6	06	00		2D	00
7	07	00		2A	00
8	08	00		1D	00
9	09	00		1C	00
-/--	0A	00		26	00
0	00/05	00		15	00
P◀P	22	00		14	00
VCR	VCR	00		13	00
PP	0E	00		12	00
▲ P+	20/25	00		17	00
◀ V-	11	00		16	00
▶ V+	10/15	00		19	00
▼ P-	21	00		18/1D	00
	38/3D	00		1B	00
	0F	00		1A	00
RED	37	00		24	00
GREEN	36	00		23	00
YELLOW	32	00			
BLUE	34	00			



PS.
 Both press button “VCR” and one of any other buttons , the button would change its lead code from “00” to “05” and its code would not change. But the button’s code is red up the list would change its code from the front code to the back code. Like number “0” would change its lead code to 05 and its code would change from “00”to “05”.

7.2 Electrical Requirements:

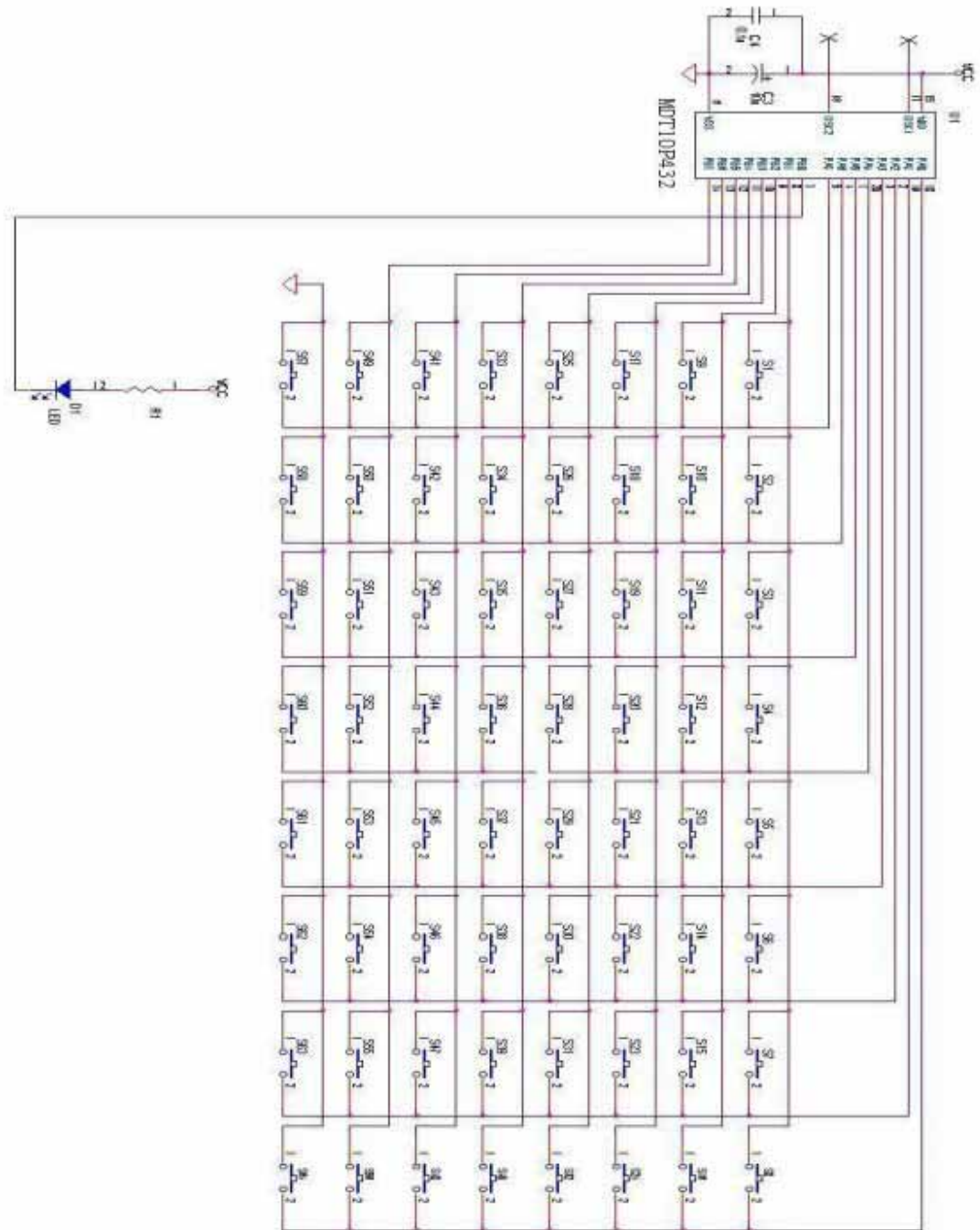
7.2.1 Transmitter

Operating Voltage	2.4 to 3.5 VDC
Current Consumption: (Low Power) (Key Depressed, No IR)	100 μ A Max 30mA Max
Key Debounce	Greater than 37.5mS
IR Wavelength	850 to 1000nm Leakage
Current	Less than 50 μ A
LED Current @ 3.2V	350-530mA
Oscillator Frequency	4 \pm 0.25MHz
Oscillator Stop Voltage	2.4 VDC or Less
Transmission Range	8 meters min
Transmission Angle	Effective Range \pm 15 Degrees at 45 feet
Power Supply	2 AAA Batteries
Operating Temp. Range	-25 Deg C to 55 Deg C
Storage Temp. Range	-15 Deg C to 45 Deg C

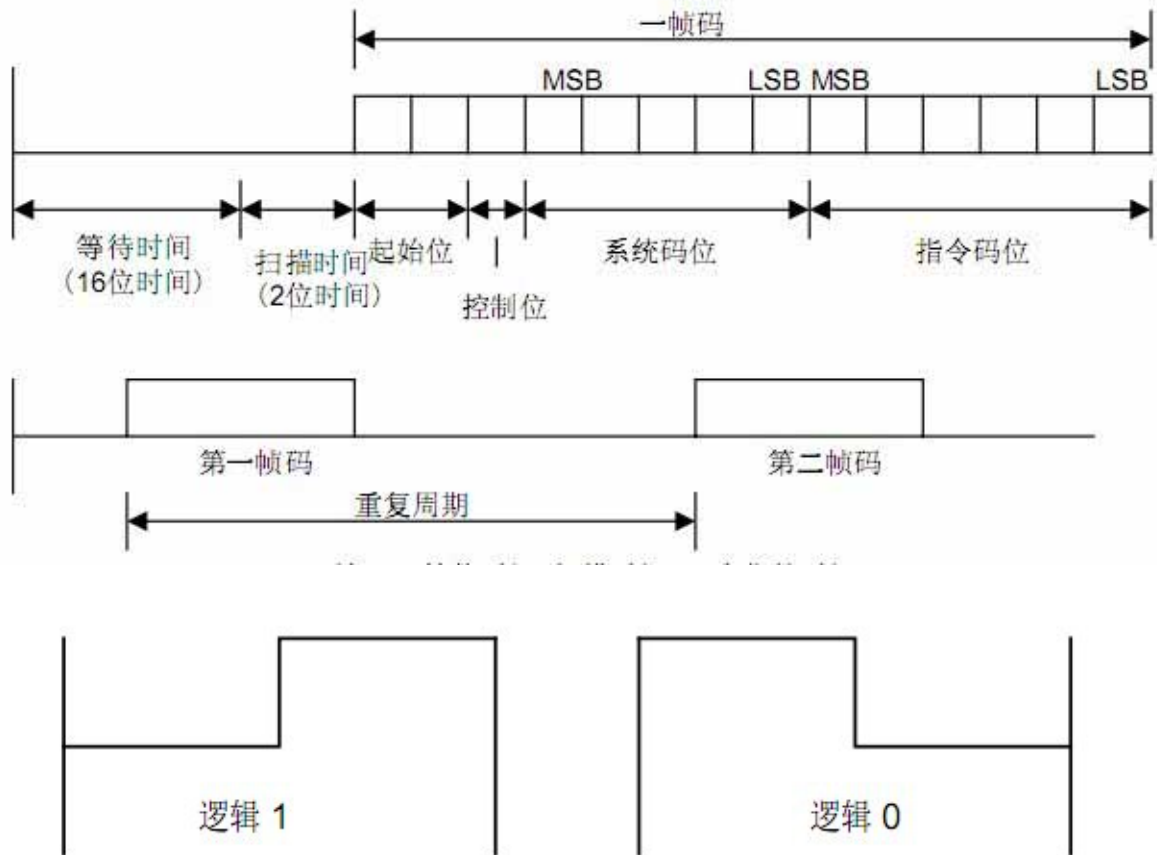
7.2.2 Conductive Rubber Keypad

Keypad Operating Voltage	1.0 to 6.0 VDC
Keypad Operating Current	100 μ A DC Min
Keypad Contact Resistance	200 Ohms Max
Keypad Insulation Resistance	100 Megohms

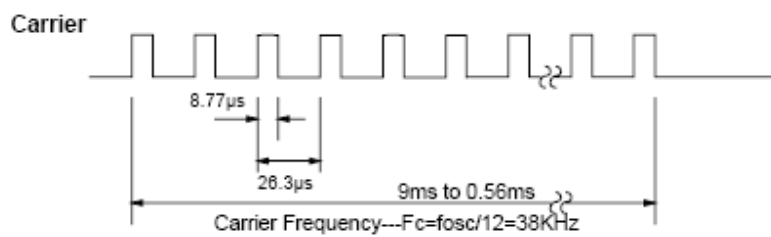
7.2.3 ELECTRICAL CIRCUIT



7.2.4 Transmitter Waveform and Code Pattern:



这里，1位的时间= $3 \times 2^8 \times T_{osc} = 1.688\text{ms}$ (典型值 $T_{osc} = 1/455\text{KHz}$)



7.3 Mechanical Requirements:

7.3.1 Key Activation

Standard key Activating Force (gms)	150-200
Travel (Vertical) (mm)	0.8mm +0.2/-0.0
Operating Life (NEDIS 47-444)	200,000 cycles min.

7.3.2 Mechanical Shock

36" Drop Test (NEDIS 47-611)	No Failures
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7.3.3 Ship Test

Vibration Test (in Bulk Packaging) (NEDIS 47-197)	No Failures
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7.3.4 Finish and Graphics must meet the Requirements of 47-188 Condition III except for rubber keypad graphics which must meet 100 Cycles to failure minimum.

7.4 Functional Requirements:

7.4.1 Output Frequency Check:

With no keys activated, the oscillator shall not be operating. With any one key activated, the oscillator shall start. Output code sequence shall then begin approximately 37.5 milliseconds later to allow for debounce. Reference Sect.

7.2.4 for key closure and timing relative to output code timing.

7.4.2 Functionality:

Each key shall be activated and the output code checked to verify that the proper code is being outputted. Code assignments for each function are shown in "I.R. TRANSMITTER CODES". I.R. code assignments shall be received from Design Engineering.

7.4.3 Stand-by-Current:

The stand-by-current shall be measured after the functionality check and after the oscillator has stopped running.

The stand-by-current level shall be less than 10 microamperes. Typical values for stand-by-current shall be less than 5 micro-amperes, 5 minutes after the batteries have been initially installed.

7.4.4 Key Operations:

Key operations shall be smooth with no binding or sticking when depressed or released.

7.4.5 Operating Distance:

The finished transmitter shall meet the horizontal and vertical range requirements indicated in Sect. 7.2.1 when using a detector amplifier with a sensitivity of .030 microwatt/(cm)². Failure to pass is indicated by missing pulses in the received waveform.

7.4.6 Environmental Conditioning:

After environmental conditioning specified below transmitters must meet electrical, mechanical and functional requirements of Sections 7.2, 7.3

- Static Humidity 96 hrs @ 40°C 93% ± 3% R.H.
- Thermal Cycling 5 cycles of 3 hr @ -10°C followed by 3 hr @ +40°C
- Dry Heat 2 hrs @ 55 ± 2°C

8.0 REVOKING APPROVAL

An approval may be withdrawn for any of the following reasons:

- Change in electrical characteristics.
- A significant level of field or line failures due to product defects.
- Failure of delivered product to meet quality levels of samples qualified.
- Failure of delivered product to meet design or construction of samples qualified.
- Change in manufacturing site used to make samples qualified.