MRC, QRC & IRC SERIES

Application	Types		Poles	AC ratings	DC ratings	Page	Sockets	Page
General purpose	C2-A20	8 pin	2 C	10A / 250V	0,5A @ 110V	44	S2	56
	C3-A30	11 pin	3 C	10A / 250V	0,5A @ 110V	45	S3	57
	C4-A40	14 pin flat blade	4 C	10A / 250V	0,5A @ 110V	48	S4	59
	C5-A20	11 pin flat blade	2 C	16A / 500V	0,5A @ 110V	49	S5	59
	C5-A30	11 pin flat blade	3 C	16A / 500V	0,5A @ 110V	49	S5	59
	C7-A10	8 pin miniature flat blade	1 C	16A / 250V	0,5A @ 110V	51	S7	60
	C7-A20	8 pin miniature flat blade	2 C	10A / 250V	0,5A @ 110V	51	S7	60
	C9-A41	14 pin miniature flat blade	4 C	3A / 250V	0,5A @ 110V	53	S9	61
	C10-A10	5 pin flat blade	1 C	10A / 400V	0,5A @ 110V	54	S10	61
Twin contacts Low level loads	C2-T21	8 pin	2 C	6A / 250V	Min. 5mA @ 5V	44	S2	56
	C3-T31	11 pin	3 C	6A / 250V	Min. 5mA @ 5V	45	S3	57
	C7-T21	8 pin miniature flat blade	2 C	6A / 250V	Min. 5mA @ 5V	51	S7	60
	C10-T13	5 pin flat blade	1 C	6A / 400V	Min. 1mA @ 5V	54	S10	61
Open contacts DC load switching; Flag not available	C2-G20	8 pin	2 NO	10A / 250V	1,2A @ 110V	44	S2	56
	C3-G30	11 pin	3 NO	10A / 250V	1,2A @ 110V	45	S3	57
	C5-G30	11 pin flat blade	3 NO	16A / 500V	1,2A @ 110V	49	S5	59
	C7-G20	8 pin miniature flat blade	2 NO	10A / 250V	0,8A @ 110V	52	S7	60
Double make DC load switching; Flag not available	C3-X10	11 pin	1 DM	10A / 250V	7A @ 110V	46	S3	57
	C4-X20	14 pin flat blade	2 DM	10A / 250V	7A @ 110V	48	S4	59
	C5-X10	11 pin flat blade	1 DM	10A / 250V	7A @ 110V	50	S5	59
	C7-X10	8 pin miniature flat blade	1 DM	10A / 250V	6A @ 110V	52	S7	60
Magnet blow-out Flag not available	C3-M10	11 pin	1 DM	10A / 250V	10A @ 220V	46	S3	57
	C5-M10	11 pin flat blade	1 DM	16A / 500V	10A @ 220V	50	S5	59
Latching LED not available	C3-R20	11 pin	2 C	10A / 250V	0,5A @ 110V	46	S3	57
	C4-R30	14 pin flat blade	3 C	10A / 250V	0,5A @ 110V	48	S4	59
	C5-R20	11 pin flat blade	2 C	10A / 250V	0,5A @ 110V	50	S5	59
	C9-R21	14 pin miniature flat blade	2 C	3A / 250V	0,5A @ 110V	53	S9	61
Sensitive 250mW ... 800mW; Flag not available; LED not available	C3-S14	11 pin	1 C	6A / 250V	0,5A @ 110V	47	S3	57
	C3-E24	11 pin	2 C	6A / 250V	0,5A @ 110V	47	S3	57
	C3-N34	11 pin	3 C	6A / 250V	0,5A @ 110V	47	S3	57
	C9-E21	14 pin miniature flat blade	2 C	3A / 250V	0,5A @ 110V	53	S9	61
Lamp switching	C7-W10	Miniature, faston 187	1 NO	10A / 250V	0,5A @ 110V	52	S7	60
Time cube	CT2	8 pin plug-in timer module	2 C	10A / 250V	0,5A @ 110V	55	S2	56
	CT3	11 pin plug-in timer module	3 C	10A / 250V	0,5A @ 110V	55	S3	57

PART NUMBER KEY

C3 | A | 3 | 0 | | | X | 230A

Model series
- **C2** - MRC 8 pin
- **C3** - MRC 11 pin
- **C4** - MRC 14 pin flat blade
- **C5** - MRC 11 pin flat blade
- **C7** - QRC 8 pin miniature flat blade
- **C9** - QRC 14 pin miniature flat blade
- **C10** - IRC 5 pin flat blade

Contact Type
- **A** - standard, change-over contacts
- **T** - twin contacts (bifurcated)
- **G** - open contacts
- **X** - double make contacts
- **M** - double make, magnetic blow out
- **R** - remanence (latching)
- **S** - sensitive coil, 250 mW
- **E** - sensitive coil, 500 mW
- **N** - sensitive coil, 800 mW
- **W** - tungsten and silver contacts

Number of contacts

Coil voltage

Led indication

Special executions
- **H** - Orange push only test button
- **N** - Black blanking plug i.e. no test button
- **P** - pins for printed circuit
- **E** - cover for flange panel mounting

Additions to the coil
- **D** - free wheeling diode (DC only)
- **F** - polarity and free wheeling diodes (dc only)
- **B** - rectifying bridge for AC/DC relays
- **R** - RC suppressor (only MR-C types)

Contact materials
- **0** - standard
- **9** - gold-flashed contact, 0,2µ Au
- **8** - gold-plated contact, 10µ Au
- **4** - sensitive MRC relays
- **2** - gold-plated 10µ Au (twin and C9 relays)
- **1** - flashed 0,2µ Au (twin and C9 relays)

GENERAL INFORMATION

Contact materials
Silver-nickel (AgNi) and silver-tin oxide ($AgSnO_2$) are used as standard contact materials for all models. Other contact materials are available on request.

Gold Flash
For relays that are intended to be stored or remain unoperated for any length of time, a 0,2µ layer of gold protects the contacts from oxidisation.

Gold Plating
A 10µ plate of gold increases the operat-ional reliability. They should be used for switching low level currents.

Contact Resistance
Contact resistance is dependent on contact material, contact pressure and contact contamination.

High contact resistance raises the temp-erature of the contacts, therefore reduc-ing their working life.
Typical contact resistance of the MR-C and QR-C relays is 50 mΩ.

Contacts gap
Contact gap and opening speed of the contacts have an influence on the length and the duration of the arc.

In the case of AC, a gap of 0,5 mm is sufficient to quench the arc which occurs automatically at the "zero point" of the cycle.
In the case of DC, the arc only quenches when the contact gap is sufficient for the voltage and current applied.
Please see tables of "Max. DC current".

Maximum Intensity
The "Max. switching current" indicated in every model, refers to the maximum stable current which should be possible in permanent conduction (**ITH**).

In the case of AC, the "Max. switchingcurrent" that the relay can support is the same for all the values of voltages ≤ of the "Max. switching voltage" specified in every model.
The product of the intensity and the volt-age applied should not be higher than the values specified as "Max. AC load".

In the case of DC, the "Max. switching current" must be less than the current that causes the continuous arcing.
The tables of "Max. DC current" show the possible values of intensity in relation to the applied voltage.

Maximum Voltage
The maximum voltage on the contacts depends on the insulation between each contact (pole to pole) and between all contacts and the coil.

The EN60947 and VDE 0110 standards set out the maximum voltage values, taking into consideration the quality of the insulation materials, pollution degree as well as the shape and dimensions of the contact barriers (creepage distance).

Contacts in series
The connection of two or more contacts in series is equivalent to multiplying the contact gap by that amount. By using this method, a greater break capacity is achieved for DC switching.

Contacts in parallel
The connection of two or more contacts in parallel does not mean that it is poss-ible to switch a greater load. However, the stable current and the operational reliability of the relay is increased.

Double break contacts
The double break contact arrangement is equivalent to two contacts connected in series.
The maximum intensity supported corresponds to only one contact. This system allows for higher DC operating voltages.

Bifurcated (twin) contacts
The contact blade is divided into two parts, each with its own contact.
Both contacts press down each on their own independent fixed contacts.

This system is particularly good for reliably switching at very low levels.

Contact protection
The electrical life of contacts can be prolonged by components which eliminate or reduce the back EMF transients.
These voltages are generated by the reactive component of the load on disconnection, which increases the duration and the temperature of the arc.

For AC, RC suppressors or varistors can be connected in parallel with the load or the contacts.

For DC with an inductive load, the best method is to connect a diode in parallel with the load.

Coil Materials
Coils bobbins are moulded in poly-butylene with fibreglass (130° C).
Enamelled wires of Class F specification are used (155° C).

They are wound on automatic precision winding machines, with the number of turns and wire tension accurately regulated and monitored.

Tolerances
Coil resistance is measured at 20° C and is regulated within ± 10% of specified value.

Standard Windings
The coil voltages indicated in the catal-ogue refer to standard windings.
Other coil voltages are available, includ-ing products for series connection and amperometric applications.
Please consult your distributor for details.

Minimum working voltage (pull in)
This is the minimum voltage that must be supplied to the coil to ensure that the relay energises, the contacts change over and are positively held in place without any vibration.
The values of voltage specified are those at or above which the relay must pull in.

DC relays ≥ 80% **Un**
AC relays ≥ 80% **Un**

Maximum release voltage (drop out)
This is the voltage at which the relay de-energises, the contacts change over and are positively held in place without any vibration.
The values of voltage specified are those at or below which the relay must drop out.

DC relays ≥ 10% **Un**
AC relays ≤ 15% **Un**

Ambient temperature
The ambient temperature has an influence on the coil resistence and on its thermal dissipation capacity.

Curve 1 represents the variations of the pull in voltage (% **Un**) in relation with the ambient temperature (**T**).
Curve 2 indicates the maximum values of the voltage applied (**Ub**) to the coil in rel-ation with the nominal voltage (**Un**) at the ambient temperature (**T**).