

KLIXON[®]

Motor Starting Relays from Texas Instruments

4CR Series Current Type

- Reliable operation and long life independent of mounting position
- Wide range of pick-up and drop-out ratings
- Start-winding current rating — 25 amps
- Small size for installation in compact equipment
- Economical



The KLIXON 4CR current type motor starting relay is a compact, high capacity relay, designed for universal application to split-phase and capacitor start, single-phase motors with start-winding currents up to 25 amperes.

UL Descriptive Report

UL File# SA-3745, 3-8-68
CSA# LR11372

Construction

The 4CR relay utilizes a balanced armature to provide positive operation independent of mounting position. Double-break bonded Top-lay contacts provide excellent electrical and thermal conductivity to provide the high switching capacity and long electrical life. Silver cadmium oxide is used for the 25 amp contacts.

Mounting and Terminals

The 4CR relay's compact size and universal mounting allow cost saving reductions in motor size and elimination of centrifugal switches. Mounting can be in the motor, in the conduit box, or remote from the motor. Calibrated in one position for a specific pick-up and drop-out, the 4CR remains within tolerance in all other mounting positions. A variety

of mounting brackets, terminals and assembly screw extensions are available to meet any mounting requirements.

Pick-Up and Drop-Out Ratings

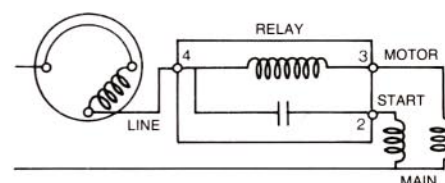
Ratings indicate maximum pick-up

and minimum drop-out current limits. Pick-up is the current through the relay coil required to close the relay contacts. Drop-out is the current through the relay coil at which the contacts open. A production relay of a given rating will have a pick-up and drop-out current within the rating limit.

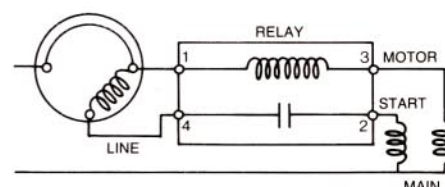
Operation

The 4CR relay coil is in series with the main winding of the motor and the normally open contacts are in series with the start winding. When voltage is applied to the motor, the in-rush current of the main winding through the relay coil creates a magnetic force which rotates the armature. This action closes the relay contacts and energizes the motor start winding.

As motor speed increases, the current in the main winding and relay coil decrease to a point where the armature biasing spring force is greater than the decreasing magnetic force, and the armature rotates back to its original position. This opens the relay contacts and disconnects the start winding.



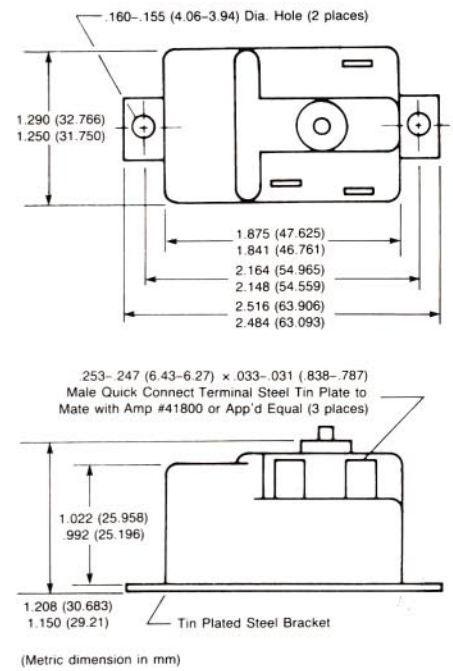
Single Circuit Relay



Two Circuit Relay

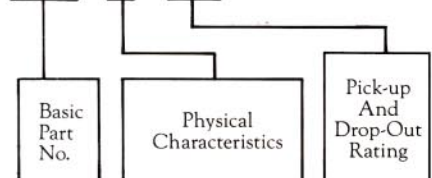
Rating Data Table

KLIXON Rating No.	Relay Operating Characteristics in Amps		KLIXON Rating No.	Relay Operating Characteristics in Amps		KLIXON Rating No.	Relay Operating Characteristics in Amps	
	Max. Pick-Up	Min. Drop-Out		Max. Pick-Up	Min. Drop-Out		Max. Pick-Up	Min. Drop-Out
600	1.01	0.83	662	6.30	5.20	724	15.0	12.4
601	1.07	0.88	663	6.40	5.30	725	15.2	12.5
602	1.12	0.93	664	6.50	5.35	726	15.4	12.7
603	1.17	0.97	665	6.60	5.45	727	15.6	12.8
604	1.22	1.01	666	6.70	5.50	728	15.8	13.0
605	1.27	1.06	667	6.80	5.60	729	16.0	13.2
606	1.32	1.10	668	6.90	5.70	730	16.2	13.4
607	1.38	1.13	669	7.00	5.80	731	16.4	13.5
608	1.42	1.17	670	7.10	5.90	732	16.6	13.7
609	1.47	1.22	671	7.20	5.90	733	16.8	13.9
610	1.53	1.27	672	7.30	6.00	734	17.0	14.0
611	1.58	1.30	673	7.40	6.10	735	17.3	14.3
612	1.63	1.35	674	7.50	6.20	736	17.5	14.4
613	1.68	1.38	675	7.60	6.30	737	17.7	14.6
614	1.73	1.43	676	7.70	6.30	738	17.9	14.8
615	1.78	1.47	677	7.80	6.40	739	18.1	14.9
616	1.83	1.51	678	7.90	6.50	740	18.3	15.1
617	1.88	1.55	679	8.00	6.60	741	18.5	15.3
618	1.93	1.59	680	8.10	6.70	742	18.7	15.4
619	1.98	1.64	681	8.20	6.80	743	18.9	15.6
620	2.03	1.68	682	8.30	6.80	744	19.1	15.8
621	2.13	1.76	683	8.40	6.90	745	19.3	15.9
622	2.23	1.84	684	8.50	7.00	746	19.5	16.1
623	2.33	1.92	685	8.60	7.10	747	19.7	16.3
624	2.43	2.02	686	8.70	7.20	748	19.9	16.4
625	2.54	2.10	687	8.80	7.30	749	20.1	16.6
626	2.63	2.17	688	8.90	7.40	750	20.3	16.7
627	2.74	2.26	689	9.00	7.50	751	20.5	16.9
628	2.85	2.35	690	9.10	7.50	752	20.7	17.1
629	2.95	2.45	691	9.20	7.60	753	20.9	17.2
630	3.05	2.50	692	9.30	7.70	754	21.1	17.4
631	3.25	2.60	693	9.40	7.80	755	21.3	17.6
632	3.25	2.70	694	9.50	7.80	756	21.5	17.7
633	3.35	2.75	695	9.60	7.90	757	21.7	17.9
634	3.45	2.85	696	9.70	8.00	758	21.9	18.1
635	3.55	2.95	697	9.80	8.10	759	22.1	18.2
636	3.65	3.05	698	9.90	8.20	760	22.3	18.4
637	3.75	3.20	699	10.0	8.30	761	22.5	18.6
638	3.85	3.20	700	10.2	8.40	762	22.7	18.8
639	3.95	3.30	701	10.4	8.60	763	22.9	18.9
640	4.05	3.35	702	10.6	8.70	764	23.1	19.1
641	4.15	3.45	703	10.8	8.90	765	23.3	19.2
642	4.25	3.55	704	11.0	9.10	766	23.6	19.5
643	4.35	3.60	705	11.2	9.20	767	23.9	19.7
644	4.45	3.70	706	11.4	9.40	768	24.3	20.1
645	4.55	3.80	707	11.6	9.60	769	24.6	20.3
646	4.65	3.85	708	11.8	9.70	770	25.0	20.6
647	4.75	3.95	709	12.0	9.90	771	25.3	20.9
648	4.85	4.00	710	12.2	10.1	772	25.6	21.1
649	4.95	4.10	711	12.4	10.2	773	26.1	21.5
650	5.10	4.20	712	12.6	10.4	774	26.4	21.8
651	5.15	4.25	713	12.8	10.6	775	26.7	22.0
652	5.25	4.35	714	13.0	10.7	776	27.1	22.3
653	5.40	4.45	715	13.2	10.9	777	27.4	22.6
654	5.50	4.55	716	13.4	11.0	778	27.9	23.0
655	5.60	4.60	717	13.6	11.2	779	28.4	23.4
656	5.70	4.70	718	13.8	11.4	780	28.9	23.9
657	5.80	4.75	719	14.0	11.5	781	29.4	24.3
658	5.90	4.85	720	14.2	11.7	782	29.9	24.7
659	6.00	4.95	721	14.4	11.9	783	30.4	25.1
660	6.10	5.05	722	14.6	12.1	784	31.0	25.5
661	6.20	5.15	723	14.8	12.2	785	31.5	26.0



Sample Code

4CR - 1 - 671



How To Order

Specify:

1. KLIXON part number 4CR, select maximum pick-up and minimum drop-out current values and specify rating number from table.
2. Motor start winding current, voltage and frequency.
3. Terminals and mounting bracket required.

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