



SERVING
SAFETY

Mors Smitt Railway Technology

Q-style BR930 signalling relays

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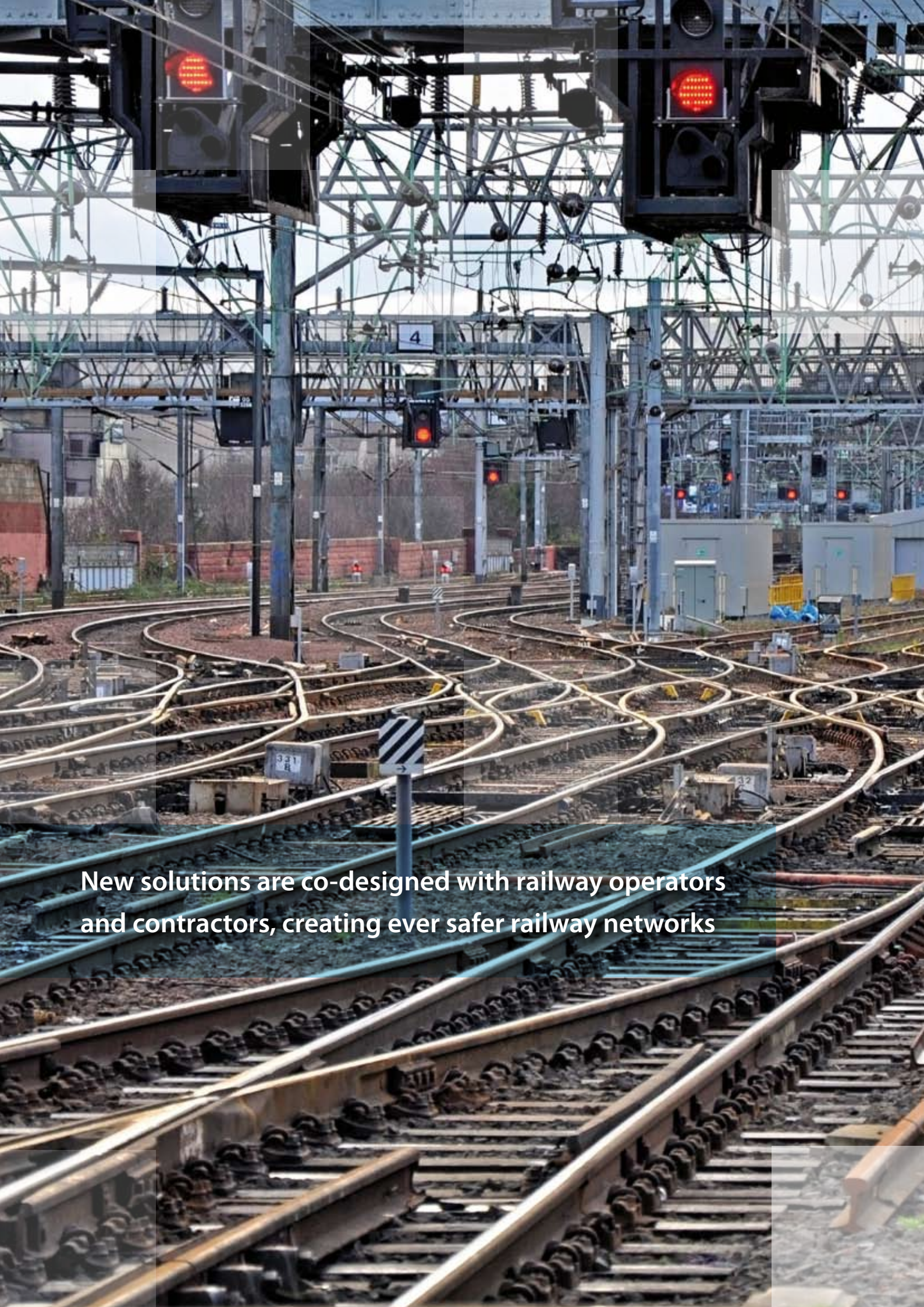


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Q-style BR930 signalling relays

Formerly Tyer, Field & Grant, STS Rail



New solutions are co-designed with railway operators and contractors, creating ever safer railway networks

Mors Smitt has expanded its wide range of relay products with the Q-style BR930 signalling relays manufactured by Mors Smitt UK Ltd. in Cradley Heath in the UK. We have been manufacturing these relays since the 1960's and have successfully supplied a wide variety of versions to railway operators throughout the world.

Originally manufactured as Tyer, then as Field & Grant, STS Rail and now as Mors Smitt UK. There are over 150 relay designs currently being manufactured meeting the requirements of many railway operators.



Key features

- Non-weld silver and silver impregnated carbon contact tips
- Automated vision system and operator inspection
- Comprehensive automated end of line testing
- End of line test results available on request
- Certificate of Conformity supplied with each order
- Recertification and repair services available

Of modular plug-in design, the relays are secured in their mating plug boards by a wire retaining clip. Interlocking of the relay and plugboard is achieved by a pin code registration system which ensures that only those relays having the same pin code as the plugboard can be interchanged.

The contact arrangement for each relay is as specified in the relevant BR standard and up to 16 pairs of contacts can be accommodated in the same housing, with front contacts being normally open and back contacts normally closed. Contact pairs typically consist of a domed silver tip, mating with a flat, silver/carbon tip and all contacts are rated in accordance with the appropriate BR specification.

A full repair, refurbishment and recertification service is available from Mors Smitt UK together with fast track manufacturing for urgent requirements.

Data sheets are available for every relay listed and with over 150 designs in production we offer a comprehensive and diverse range.



BR930 series miniature signalling relays

Sorted by catalogue number

Catalogue number	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Q reference
TY082/GRP01	0001	12	4	24 VDC	930	DC neutral line relay	QN1
TY082/GRP02	0001	12	4	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP03	0001	8	4	24 VDC	930	DC neutral line relay	QN1
TY082/GRP04	0001	8	4	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP05	0002	8	8	24 VDC	930	DC neutral line relay	QN1
TY082/GRP06	0002	8	8	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP07	0002	6	6	24 VDC	930	DC neutral line relay	QN1
TY082/GRP08	0002	6	6	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP09	0002	4	4	24 VDC	930	DC neutral line relay	QN1
TY082/GRP10	0002	4	4	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP11	0003	12	4	50 VDC	930	DC neutral line relay	QN1
TY082/GRP12	0003	12	4	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP13	0003	8	4	50 VDC	930	DC neutral line relay	QN1
TY082/GRP14	0003	8	4	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP15	0004	8	8	50 VDC	930	DC neutral line relay	QN1
TY082/GRP16	0004	8	8	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP17	0004	6	6	50 VDC	930	DC neutral line relay	QN1
TY082/GRP18	0004	6	6	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP19	0004	4	4	50 VDC	930	DC neutral line relay	QN1
TY082/GRP20	0004	4	4	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP24	T002	12	4	24 VDC	(930	High sensitivity DC neutral line relay	N/A
TY083/GRP01	0021	12	4	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP02	0021	8	4	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP03	0022	8	8	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP04	0022	6	6	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP05	0022	4	4	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP06	0023	12	4	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP07	0023	8	4	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP08	0024	8	8	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP09	0024	6	6	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP10	0024	4	4	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY084/GRP01	0025	12	4	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP02	0025	8	4	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP03	0026	8	8	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP04	0026	6	6	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP05	0026	4	4	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP06	0027	12	4	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP07	0027	8	4	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP08	0028	8	8	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP09	0028	6	6	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP10	0028	4	4	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY085/GRP01	0041	8	4	24 VDC	933A	AC immune DC slow pick-up neutral line relay	QSPA1
TY085/GRP02	0043	8	4	50 VDC	933A	AC immune DC slow pick-up neutral line relay	QSPA1

BR930 series miniature signalling relays

Sorted by catalogue number



Catalogue number	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Q reference
TY086/GRP01	0061	8	4	24 VDC	934A	AC immune DC slow release neutral line relay	QSRA
TY086/GRP02	0063	8	4	50 VDC	934A	AC immune DC slow release neutral line relay	QSRA1
TY087/GRP01	0009	11	4	24 VDC	935A	DC magnetically latched neutral line relay	QL1
TY087/GRP02	0011	11	4	50 VDC	935A	DC magnetically latched neutral line relay	QL1
TY087/GRP03	0007	8	6	24 VDC	935A	DC magnetically latched neutral line relay	QL1
TY087/GRP04	0008	8	6	50 VDC	935A	DC magnetically latched neutral line relay	QL1
TY132/GRP01	0070	2	2	1.4 AAC	942	AC lamp proving relay	QUCX1
TY132/GRP02	0071	4	-	0.4 AAC	941	AC lamp proving relay	QECX1
TY132/GRP06	ADGHS	2	2	0.55 AAC	(942)	AC lamp proving relay	QUCX3
TY133/GRP01	0081	4	-	2.2 ADC	940	DC lamp proving relay	QEC1
TY133/GRP02	0081	4	2	2.2 ADC	940	DC lamp proving relay	QEC1
TY133/GRP03	0091	4	-	1.5 ADC	945	DC lamp proving relay	QECF1
TY150/GRP01	0101	2	-	500 m ADC	938A	DC neutral track relay	QT2
TY151/GRP01	0014	8	8	24 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP02	0014	4	4	24 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP03	0016	8	8	50 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP04	0016	4	4	50 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP05	0013	12	4	24 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP06	0015	12	4	50 VDC	936A	DC polarised magnetic stick line relay	N/A
TY152/GRP01	0111	2	-	P.U. 17 VDC	968	DC neutral track relay	QT2
TY153/GRP01	0105	2	-	400 m ADC	939A	AC immune DC neutral track relay	QTA2
TY153/GRP02	0110	2	-	400 m ADC	966 F2	AC immune DC neutral track relay	QTA2
TY153/GRP03	0110	2	1	400 m ADC	(996 F2)	AC immune DC neutral track relay	N/A
TY153/GRP04	0104	2	-	10 VDC	966 F9	AC immune DC neutral track relay	QTA2
TY153/GRP05	0110	2	2	400 m ADC	(966 F2)	AC immune DC neutral track relay	QTA2
TY153/GRP07	ADFKS	4	-	135 m AAC	(941)	AC lamp proving relay	QECX19
TY153/GRP08	BCFGS	4	2	800 m AAC & 50 VDC	(941)	AC lamp proving relay with DC latching	QUCX5
TY153/GRP09	ACEKS	2	-	0.72 AAC	(942)	AC lamp proving relay	QECX16
TY154/GRP02	0170	2H	4	24 VDC	943	AC immune DC biased contactor relay	QBCA1
TY154/GRP03	0172	2H	4	50 VDC	943	AC immune DC biased contactor relay	QBCA1
TY155/GRP01	6046	1	3	24 VDC	949	DC non-safety time delay relay	QCJ1
TY155/GRP02	6047	1	3	50 VDC	949	DC non-safety time delay relay	QCJ1
TY156/GRP01	0212	6	2	50 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP02	0211	4	4	50 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP03	0211	2	2	50 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP04	0092	6	2	24 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP05	0057	4	4	24 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP06	0057	2	2	24 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP07	0056	6	1	50 VDC	960	Twin DC neutral line double wound relay	QNN1
TY156/GRP08	0060	4	3	50 VDC	960	Twin DC neutral line double wound relay	QNN1
TY156/GRP09	0060	2	1	50 VDC	960	Twin DC neutral line double wound relay	QNN1
TY156/GRP10	0055	6	1	24 VDC	960	Twin DC neutral line double wound relay	QNN1

BR930 series miniature signalling relays

Sorted by catalogue number

Catalogue number	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Q reference
TY156/GRP11	0054	4	3	24 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP12	0054	2	1	24 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP13	0092	6	2	24 VDC	960	High sensitivity twin DC neutral line relay	QNN1
TY157/GRP01	0049	6	2	50 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP02	0017	4	4	50 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP03	0017	2	2	50 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP04	0098	6	2	24 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP05	0097	4	4	24 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP06	0097	2	2	24 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP08	BEFGX	6	2	12 VDC	-	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP09	ABDKS	4	4	12 VDC	-	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP10	ABDKS	2	2	12 VDC	(961)	Twin AC immune DC biased neutral line relay	N/A
TY159/GRP03	0216	6	2	50 VDC	963	Twin DC slow-acting neutral line relay	QNNS1
TY159/GRP04	0215	4	4	50 VDC	963	Twin DC immune neutral line relay	QNNS1
TY160/GRP01	0209	6	2	50 VDC	(966 F6)	Twin AC immune neutral line relay	QNNA1
TY160/GRP02	0210	4	4	50 VDC	966 F6	Twin AC immune neutral line relay	QNNA1
TY160/GRP03	0210	2	2	50 VDC	966 F6	Twin AC immune neutral line relay	QNNA1
TY160/GRP04	0962	6	2	24 VDC	-	Twin AC immune neutral line relay	QNNA1
TY160/GRP05	0963	4	4	24 VDC	-	Twin AC immune neutral line relay	QNNA1
TY160/GRP06	0963	2	2	24 VDC	-	Twin AC immune neutral line relay	N/A
TY163/GRP01	0232	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP02	0233	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP03	0234	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP04	0235	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP05	0236	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY178/GRP01	1057	8	8	24 VDC	966 F3	DC neutral line relay with medium duty back contacts	N/A
TY178/GRP02	1057	8	8	24 VDC	966 F3	DC neutral line double wound relay with medium duty back contacts	N/A
TY192/GRP01	0029	8	4	110 VAC	966 F7	AC neutral line relay	QNHX
TY195/GRP01	0307	8	4	30 VDC	(930A)	DC neutral line double wound relay	N/A
TY201/GRP01	0957	4	4	12 VDC	(930A)	High sensitivity DC neutral line relay	SN (N/A)
TY206/GRP01	0030	2	-	2 A	966 F8	Twin DC lamp proving relay	QEECF1
TY206/GRP02	0062	3	-	1.4 A	966 F10	Twin DC lamp proving relay	N/A
TY266/GRP01	0133	6	3	12 VDC	ZS2411	DC neutral reed follower relay	QT2R
TY370/GRP01	BCEGX	-	-	12 VDC	-	Slow-release timer unit	QTD4
TY370/GRP11	DEHKX	-	-	5 VDC	-	Led flasher unit	QDF3
TY370/GRP21	CDFKX	-	-	50 VDC	-	Resistor/capacitor circuit	QR5
TY372/GRP01	BDFHX	5	2	50 VDC	-	Slow operate timer relay	QTD5

Note: BR standard numbers in brackets are where relays are nominally to the standard but certain characteristics have been modified to suit special applications.

BR930 series miniature signalling relays

Sorted by Q reference



Catalogue number	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Q reference
TY084/GRP01	0025	12	4	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP02	0025	8	4	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP03	0026	8	8	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP04	0026	6	6	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP05	0026	4	4	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP06	0027	12	4	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP07	0027	8	4	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP08	0028	8	8	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP09	0028	6	6	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP10	0028	4	4	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY157/GRP02	0017	4	4	50 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP03	0017	2	2	50 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP01	0049	6	2	50 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP05	0097	4	4	24 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP06	0097	2	2	24 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP04	0098	6	2	24 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP09	ABDKS	4	4	12 VDC	-	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP10	ABDKS	2	2	12 VDC	(961)	Twin AC immune DC biased neutral line relay	N/A
TY157/GRP08	BEFGX	6	2	12 VDC	-	Twin AC immune DC biased neutral line relay	QBBA1
TY154/GRP02	0170	2H	4	24 VDC	943	AC immune DC biased contactor relay	QBCA1
TY154/GRP03	0172	2H	4	50 VDC	943	AC immune DC biased contactor relay	QBCA1
TY155/GRP01	6046	1	3	24 VDC	949	DC non-safety time delay relay	QCJ1
TY155/GRP02	6047	1	3	50 VDC	949	DC non-safety time delay relay	QCJ1
TY370/GRP11	DEHKX	-	-	5 VDC	-	Led flasher unit	QDF3
TY133/GRP01	0081	4	-	2.2 ADC	940	DC lamp proving relay	QEC1
TY133/GRP02	0081	4	2	2.2 ADC	940	DC lamp proving relay	QEC1
TY133/GRP03	0091	4	-	1.5 ADC	945	DC lamp proving relay	QECF1
TY132/GRP02	0071	4	-	0.4 AAC	941	AC lamp proving relay	QECX1
TY153/GRP09	ACEKS	2	-	0.72 AAC	(941)	AC lamp proving relay	QECX16
TY153/GRP07	ADFKS	4	-	135 m AAC	(941)	AC lamp proving relay	QECX19
TY206/GRP01	0030	2	-	2 A	966 F8	Twin DC lamp proving relay	QEECF1
TY206/GRP02	0062	3	-	1.4 A	966 F10	Twin DC lamp proving relay	N/A
TY087/GRP03	0007	8	6	24 VDC	935A	DC magnetically latched neutral line relay	QL1
TY087/GRP04	0008	8	6	50 VDC	935A	DC magnetically latched neutral line relay	QL1
TY087/GRP01	0009	11	4	24 VDC	935A	DC magnetically latched neutral line relay	QL1
TY087/GRP02	0011	11	4	50 VDC	935A	DC magnetically latched neutral line relay	QL1
TY082/GRP01	0001	12	4	24 VDC	930	DC neutral line relay	QN1
TY082/GRP03	0001	8	4	24 VDC	930	DC neutral line relay	QN1
TY082/GRP05	0002	8	8	24 VDC	930	DC neutral line relay	QN1
TY082/GRP07	0002	6	6	24 VDC	930	DC neutral line relay	QN1
TY082/GRP09	0002	4	4	24 VDC	930	DC neutral line relay	QN1
TY082/GRP11	0003	12	4	50 VDC	930	DC neutral line relay	QN1

BR930 series miniature signalling relays

Sorted by Q reference

Catalogue number	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Q Reference
TY082/GRP13	0003	8	4	50 VDC	930	DC neutral line relay	QN1
TY082/GRP15	0004	8	8	50 VDC	930	DC neutral line relay	QN1
TY082/GRP17	0004	6	6	50 VDC	930	DC neutral line relay	QN1
TY082/GRP19	0004	4	4	50 VDC	930	DC neutral line relay	QN1
TY082/GRP24	T002	12	4	24 VDC	(930)	High sensitivity DC neutral line relay	N/A1
TY201/GRP01	0957	4	4	12 VDC	(930A)	High sensitivity DC neutral line relay	N/A
TY083/GRP01	0021	12	4	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP02	0021	8	4	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP03	0022	8	8	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP04	0022	6	6	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP05	0022	4	4	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP06	0023	12	4	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP07	0023	8	4	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP08	0024	8	8	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP09	0024	6	6	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP10	0024	4	4	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY195/GRP01	0307	8	4	30 VDC	(930A)	DC neutral line double wound relay	N/A
TY082/GRP02	0001	12	4	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP04	0001	8	4	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP06	0002	8	8	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP08	0002	6	6	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP10	0002	4	4	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP12	0003	12	4	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP14	0003	8	4	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP16	0004	8	8	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP18	0004	6	6	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP20	0004	4	4	50 VDC	930	DC neutral line double wound relay	QND2
TY178/GRP02	1057	8	8	24 VDC	966 F3	DC neutral line double wound relay with medium duty back contacts	N/A
TY178/GRP01	1057	8	8	24 VDC	966 F3	DC neutral line relay with medium duty back contacts	N/A
TY192/GRP01	0029	8	4	110 VAC	966 F7	AC neutral line relay	QNHX1
TY156/GRP05	0057	4	4	24 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP06	0057	2	2	24 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP04	0092	6	2	24 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP13	0092	6	2	24 VDC	960	High sensitivity twin DC neutral line relay	QNN1
TY156/GRP02	0211	4	4	50 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP03	0211	2	2	50 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP01	0212	6	2	50 VDC	960	Twin DC neutral line relay	QNN1
TY160/GRP01	0209	6	2	50 VDC	(966 F6)	Twin AC immune DC neutral line relay	QNNA1
TY160/GRP02	0210	4	4	50 VDC	966 F6	Twin AC immune DC neutral line relay	QNNA1
TY160/GRP03	0210	2	2	50 VDC	966 F6	Twin AC immune DC neutral line relay	QNNA1
TY160/GRP04	0962	6	2	24 VDC	-	Twin AC immune DC neutral line relay	QNNA1

BR930 series miniature signalling relays

Sorted by reference



Catalogue number	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Q Reference
TY160/GRP05	0963	4	4	24 VDC	-	Twin AC immune DC neutral line relay	QNNA1
TY160/GRP06	0963	2	2	24 VDC	-	Twin AC immune DC neutral line relay	N/A1
TY156/GRP11	0054	4	3	24 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP12	0054	2	1	24 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP10	0055	6	1	24 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP07	0056	6	1	50 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP08	0060	4	3	50 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP09	0060	2	1	50 VDC	960	Twin DC neutral line double wound relay	QNND1
TY159/GRP04	0215	4	4	50 VDC	963	Twin DC slow-acting neutral line relay	QNNS1
TY159/GRP03	0216	6	2	50 VDC	963	Twin DC slow-acting neutral line relay	QNNS1
TY151/GRP05	0013	12	4	24 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP01	0014	8	8	24 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP02	0014	4	4	24 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP06	0015	12	4	50 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP03	0016	8	8	50 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP04	0016	4	4	50 VDC	936A	DC polarised magnetic stick line relay	N/A
TY370/GRP21	CDFKX	-	-	50 VDC	-	Resistor/capacitor circuit	QR5
TY163/GRP01	0232	1	1	22-30 VDC	946	AC immune DC slow pick-up neutral line relay	QRJ1
TY163/GRP02	0233	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP03	0234	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP04	0235	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP05	0236	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY085/GRP01	0041	8	4	24 VDC	933A	AC immune DC slow pick-up neutral line relay	QSPA1
TY085/GRP02	0043	8	4	50 VDC	933A	AC immune DC slow pick-up neutral line relay	QSPA1
TY086/GRP01	0061	8	4	24 VDC	934A	AC immune DC slow release neutral line relay	QSRA1
TY086/GRP02	0063	8	4	50 VDC	934A	AC immune DC slow release neutral line relay	QSRA1
TY150/GRP01	0101	2	-	500 m ADC	938A	DC neutral track relay	QT2
TY152/GRP01	0111	2	-	P.U. 17 VDC	968	DC neutral track relay	QT2
TY153/GRP01	0105	2	-	400 m ADC	939A	AC immune DC neutral track relay	QTA2
TY153/GRP02	0110	2	-	400 m ADC	966 F2	AC immune DC neutral track relay	QTA2
TY370/GRP01	BCEGX	-	-	12 VDC	-	Slow-release timer unit	QTD4
TY372/GRP01	BDFHX	5	2	50 VDC	-	Slow operate timer relay	QTD5
TY132/GRP01	0070	2	2	1.4A AC	942	AC lamp proving relay	QUCX1
TY132/GRP06	ADGHS	2	2	0.55 AAC	(942)	AC lamp proving relay	QUCX3
TY153/GRP08	BCFGS	4	2	800 m AAC & 50 VDC	(942)	AC lamp proving relay with DC latching	QUCX5
TY153/GRP03	0110	2	1	400 m ADC	(966 F2)	AC immune DC neutral track relay	N/A
TY153/GRP04	0104	2	-	10 VDC	966 F9	AC immune DC neutral track relay	QTA2
TY153/GRP05	0110	2	2	400 m ADC	(966 F2)	AC immune DC neutral track relay	QTA2
TY266/GRP01	0133	6	3	12 VDC	ZS2411	DC neutral reed follower relay	QT2R

Note: BR standard numbers in brackets are where relays are nominally to the standard but certain characteristics have been modified to suit special applications.

BR930 series miniature signalling relays

Sorted by pincode

Catalogue number	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Q Reference
TY082/GRP01	0001	12	4	24 VDC	930	DC neutral line relay	QN1
TY082/GRP02	0001	12	4	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP03	0001	8	4	24 VDC	930	DC neutral line relay	QN1
TY082/GRP04	0001	8	4	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP05	0002	8	8	24 VDC	930	DC neutral line relay	QN1
TY082/GRP06	0002	8	8	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP07	0002	6	6	24 VDC	930	DC neutral line relay	QN1
TY082/GRP08	0002	6	6	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP09	0002	4	4	24 VDC	930	DC neutral line relay	QN1
TY082/GRP10	0002	4	4	24 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP11	0003	12	4	50 VDC	930	DC neutral line relay	QN1
TY082/GRP12	0003	12	4	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP13	0003	8	4	50 VDC	930	DC neutral line relay	QN1
TY082/GRP14	0003	8	4	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP15	0004	8	8	50 VDC	930	DC neutral line relay	QN1
TY082/GRP16	0004	8	8	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP17	0004	6	6	50 VDC	930	DC neutral line relay	QN1
TY082/GRP18	0004	6	6	50 VDC	930	DC neutral line double wound relay	QND2
TY082/GRP19	0004	4	4	50 VDC	930	DC neutral line relay	QN1
TY082/GRP20	0004	4	4	50 VDC	930A	DC neutral line double wound relay	QND2
TY087/GRP03	0007	8	6	24 VDC	935A	DC magnetically latched neutral line relay	QL1
TY087/GRP04	0008	8	6	50 VDC	935A	DC magnetically latched neutral line relay	QL1
TY087/GRP01	0009	11	4	24 VDC	935A	DC magnetically latched neutral line relay	QL1
TY087/GRP02	0011	11	4	50 VDC	935A	DC magnetically latched neutral line relay	QL1
TY151/GRP05	0013	12	4	24 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP01	0014	8	8	24 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP02	0014	4	4	24 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP06	0015	12	4	50 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP03	0016	8	8	50 VDC	936A	DC polarised magnetic stick line relay	N/A
TY151/GRP04	0016	4	4	50 VDC	936A	DC polarised magnetic stick line relay	N/A
TY157/GRP02	0017	4	4	50 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP03	0017	2	2	50 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY083/GRP01	0021	12	4	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP02	0021	8	4	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP03	0022	8	8	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP04	0022	6	6	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP05	0022	4	4	24 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP06	0023	12	4	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP07	0023	8	4	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP08	0024	8	8	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP09	0024	6	6	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY083/GRP10	0024	4	4	50 VDC	931A	AC immune DC neutral line relay	QNA1
TY084/GRP01	0025	12	4	24 VDC	932A	AC immune DC biased neutral line relay	QBA1

BR930 series miniature signalling relays

Sorted by pincode



Catalogue number	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Q Reference
TY084/GRP02	0025	8	4	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP03	0026	8	8	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP04	0026	6	6	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP05	0026	4	4	24 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP06	0027	12	4	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP07	0027	8	4	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP08	0028	8	8	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP09	0028	6	6	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY084/GRP10	0028	4	4	50 VDC	932A	AC immune DC biased neutral line relay	QBA1
TY192/GRP01	0029	8	4	110 VAC	966 F7	AC neutral line relay	QNHX1
TY206/GRP01	0030	2	-	2 A	966 F8	Twin DC lamp proving relay	QEECF1
TY085/GRP01	0041	8	4	24 VDC	933A	AC immune DC slow pick-up neutral line relay	QSPA1
TY085/GRP02	0043	8	4	50 VDC	933A	AC immune DC slow pick-up neutral line relay	QSPA1
TY157/GRP01	0049	6	2	50 VDC	961	AC immune DC slow pick-up neutral line relay	QBBA1
TY156/GRP11	0054	4	3	24 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP12	0054	2	1	24 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP10	0055	6	1	24 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP07	0056	6	1	50 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP05	0057	4	4	24 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP06	0057	2	2	24 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP08	0060	4	3	50 VDC	960	Twin DC neutral line double wound relay	QNND1
TY156/GRP09	0060	2	1	50 VDC	960	Twin DC neutral line double wound relay	QNND1
TY086/GRP01	0061	8	4	24 VDC.	934A	AC immune DC slow release neutral line relay	QSRA1
TY206/GRP02	0062	3	-	1.4 A	966 F10	Twin DC lamp proving relay	N/A
TY086/GRP02	0063	8	4	50 VDC	934A	AC immune DC slow release neutral line relay	QSRA1
TY132/GRP01	0070	2	2	1.4 AAC	942	AC lamp proving relay	QUCX1
TY132/GRP02	0071	4	-	0.4 AAC	941	AC lamp proving relay	QECX1
TY133/GRP01	0081	4	-	2.2 ADC	940	DC lamp proving relay	QEC1
TY133/GRP02	0081	4	2	2.2 ADC	940	DC lamp proving relay	QEC1
TY133/GRP03	0091	4	-	1.5 ADC	945	DC lamp proving relay	QEFC1
TY156/GRP04	0092	6	2	24 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP13	0092	6	2	24 VDC	960	High sensitivity twin DC neutral line relay	QNN1
TY157/GRP05	0097	4	4	24 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP06	0097	2	2	24 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP04	0098	6	2	24 VDC	961	Twin AC immune DC biased neutral line relay	QBBA1
TY150/GRP01	0101	2	-	500 m ADC	938A	DC neutral track relay	QT2
TY153/GRP04	0104	2	-	10 VDC	966 F9	AC immune DC neutral track relay	QTA2
TY153/GRP01	0105	2	-	400 m ADC	939A	AC immune DC neutral track relay	QTA2
TY153/GRP02	0110	2	-	400 m ADC	966 F2	AC immune DC neutral track relay	QTA2
TY153/GRP03	0110	2	1	400 m ADC	(966 F2)	AC immune DC neutral track relay	N/A
TY153/GRP05	0110	2	2	400 m ADC	(966 F2)	AC immune DC neutral track relay	QTA2
TY152/GRP01	0111	2	-	P.U. 17 VDC	968	DC neutral track relay	QT2

BR930 series miniature signalling relays

Sorted by pincode

Catalogue number	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Q Reference
TY266/GRP01	0133	6	3	12 VDC	ZS2411	DC neutral reed follower relay	QT2R
TY154/GRP02	0170	2H	4	24 VDC	943	AC immune DC biased contactor relay	QBCA1
TY154/GRP03	0172	2H	4	50 VDC	943	AC immune DC biased contactor relay	QBCA1
TY160/GRP01	0209	6	2	50 VDC	(966 F6)	Twin AC immune DC neutral line relay	QNNA1
TY160/GRP02	0210	4	4	50 VDC	966 F6	Twin AC immune DC neutral line relay	QNNA1
TY160/GRP03	0210	2	2	50 VDC	966 F6	Twin AC immune DC neutral line relay	QNNA1
TY156/GRP02	0211	4	4	50 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP03	0211	2	2	50 VDC	960	Twin DC neutral line relay	QNN1
TY156/GRP01	0212	6	2	50 VDC	960	Twin DC neutral line relay	QNN1
TY159/GRP04	0215	4	4	50 VDC	963	Twin DC slow-acting neutral line relay	QNNS1
TY159/GRP03	0216	6	2	50 VDC	963	Twin DC slow-acting neutral line relay	QNNS1
TY163/GRP01	0232	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP02	0233	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP03	0234	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP04	0235	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY163/GRP05	0236	1	1	22-30 VDC	946	DC neutral time delay relay	QRJ1
TY195/GRP01	0307	8	4	30 VDC	(930A)	DC neutral line double wound relay	N/A
TY201/GRP01	0957	4	4	12 VDC	(930A)	High sensitivity DC neutral line relay	N/A
TY160/GRP04	0962	6	2	24 VDC	-	Twin AC immune DC neutral line relay	QNNA1
TY160/GRP05	0963	4	4	24 VDC	-	Twin AC immune DC neutral line relay	QNNA1
TY160/GRP06	0963	2	2	24 VDC	-	Twin AC immune DC neutral line relay	N/A
TY178/GRP01	1057	8	8	24 VDC	966 F3	DC neutral line relay with medium duty back contacts	N/A
TY178/GRP02	1057	8	8	24 VDC	966 F3	DC neutral line double wound relay with medium duty back contacts	N/A
TY155/GRP01	6046	1	3	24 VDC	949	DC non-safety time delay relay	QCJ1
TY155/GRP02	6047	1	3	50 VDC	949	DC non-safety time delay relay	QCJ1
TY157/GRP09	ABDKS	4	4	12 VDC	-	Twin AC immune DC biased neutral line relay	QBBA1
TY157/GRP10	ABDKS	2	2	12 VDC	(961)	Twin AC immune DC biased neutral line relay	N/A
TY153/GRP09	ACEKS	2	-	0.72A AC	(941)	AC lamp proving relay	QECX16
TY153/GRP07	ADFKS	4	-	135 m AAC	(941)	AC lamp proving relay	QECX19
TY132/GRP06	ADGHS	2	2	0.55 AAC	(942)	AC lamp proving relay	QUCX3
TY370/GRP01	BCEGX	-	-	12 VDC	-	Slow-release timer unit	QTD4
TY153/GRP08	BCFGS	4	2	800 m AAC & 50 VDC	(962)	AC lamp proving relay with DC latching	QUCX5
TY372/GRP01	BDFHX	5	2	50 VDC	-	Slow operate timer relay	QTD5
TY157/GRP08	BEFGX	6	2	12 VDC	-	Twin AC immune DC biased neutral line relay	QBBA1
TY370/GRP21	CDFKX	-	-	50 VDC	-	Resistor/capacitor circuit	QR5
TY370/GRP11	DEHKX	-	-	5 VDC	-	Led clasher unit	QDF3
TY082/GRP24	T002	12	4	24 VDC	(930)	High sensitivity DC neutral line relay	N/A

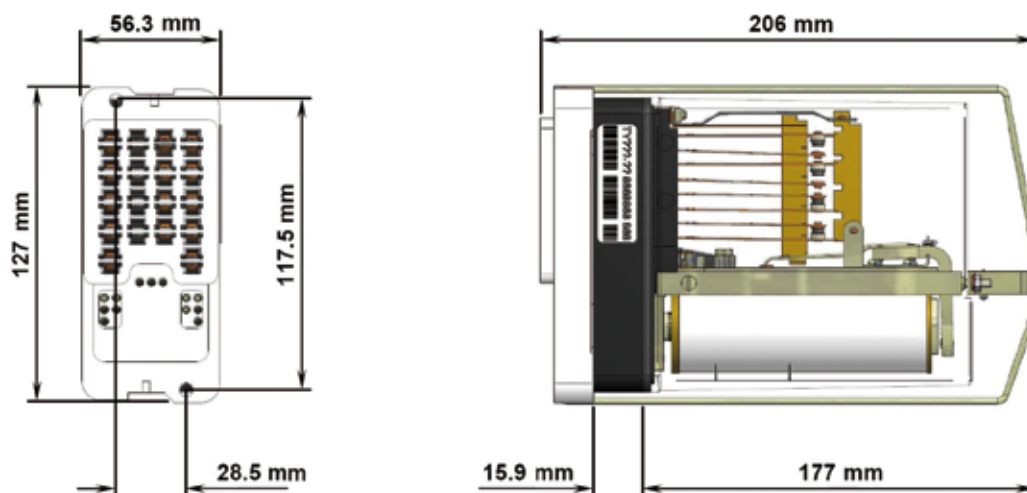
Note: BR standard numbers in brackets are where relays are nominally to the standard but certain characteristics have been modified to suit special applications.

Typical applications



Type number	BR specification	Application
TY082	930	Line end interlocking
TY083	931	Line end interlocking when AC voltages are present
TY084	932	Line end interlocking when AC voltages are present. Polarity dependent
TY085	933	Track circuit repeater
TY086	934	Signal control
TY087	935	Interlocking
TY132	942	Series proving of lamps in junction indicator (5 lamps 110v 25w)
TY132	941 & 948	Proving of AC signal lamps
TY133	940	Proving of DC signal lamps
TY133	945	Proving of level crossing flashing signals
TY150	938	4Ω track relay 2F contacts
TY152	968	250Ω track relay for electronic track circuits
TY153	939	20Ω track relay where AC voltages are present
TY153	966 F2	9Ω track relay for use in AC electrified areas
TY153	966 F9	70 Ohm track relay when AC voltages are present
TY154	943	For point machine operation
TY155	949	Used in conjunction with TY154 to provide a time delay on point machine operation. This is a non-safety relay.
TY156	960	Line and interlocking
TY157	961	Line and interlocking when AC voltages are present
TY160	966 F6	Line and interlocking
TY163	946	Time delays on automatic half barrier level crossing
TY163	946	Time delays for starting signal release
TY178	966 F3	An alternative to TY82 with larger current carrying capacity on back contacts
TY192	966 F7	Solid state interlocking (SSI) interface relay
TY206	966 F8/F10	Lamp proving for flashing signals

Dimensions

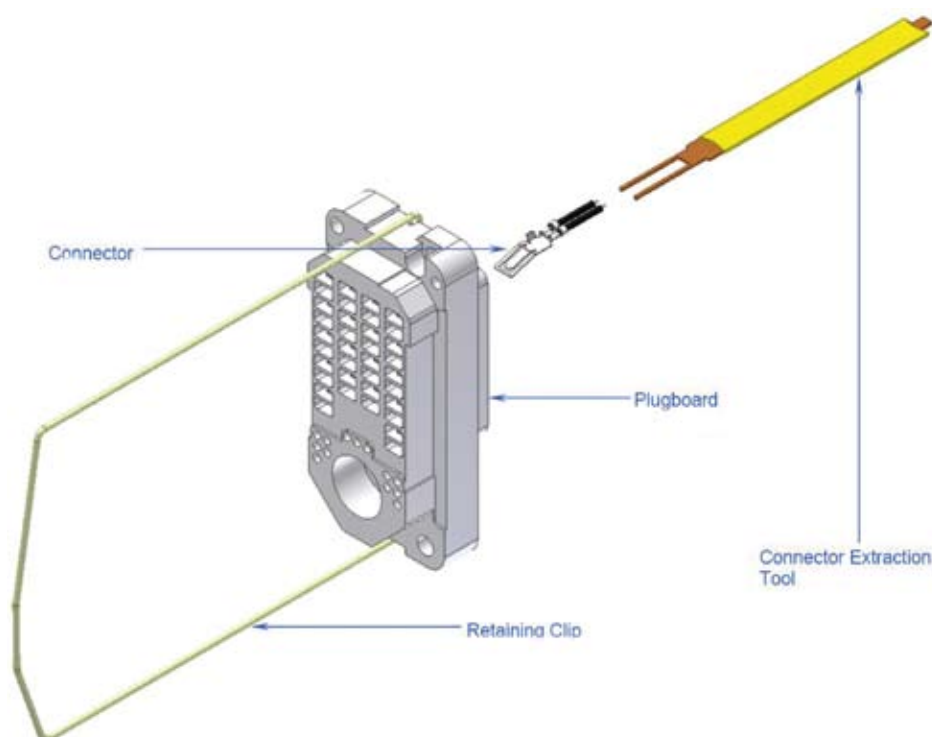


Plugboards & connectors

Plugboards

- For BR930 series relays and GEC
- Supplied undrilled or drilled to suit relay pin code.
- Optional relay retaining clip.
- Available with connectors.
- Connectors available separately.

Connectors



Reference number	BR Standard	Description
TY081-0000	BR829	Standard pack comprising: Plugboard - 1 off Retaining clip - 1 off Connectors - 24 off
TY081-0001	-	Plugboard with retaining clip
TY081-001	BR829	Plugboard –undrilled non-phenolic white
TY081-002	BR831	Connector (for use with TY 85/2081)
D62669		GEC plugboard
D328705		Connector (for use only with GEC Plugboard)
TY081-003	BR930	Relay retaining clip
TY081-007	-	Plugboard connector extraction tool

Q-style, BR930 signalling relays

One of only 2 manufacturers supplying the UK market

- Supply approx. 50% of UK demand (25,000 relays per year)
- Products fully approved by UK Network Rail

Full design capability

- Over 50 years BR930 relay design experience
- Multi-disciplined design and engineering skills set
- Short design to manufacture lead times

Flexible and responsive manufacturing

- Latest technology based production line and test equipment
- Supply against low and high volume orders alike
- Adaptable to customer delivery requirements
- 6 to 8 week lead times
- Two week fast track delivery service for emergencies

Full repair and re-calibration capability

- Dedicated service department
- Repair, test and re-certification
- Short turn round times

Service exchange

- Economic solution for replacement relays
- 12 months warranty
- Short lead times

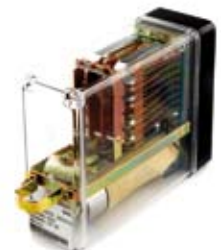
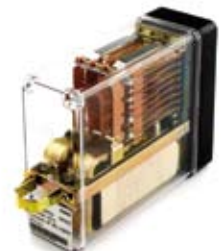
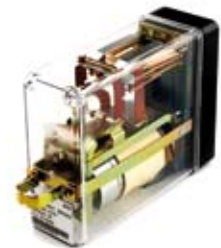
Miniature plug-in signalling relays

Custom design service

- Application specific and special purpose relays
- Full CAD design capability
- Electronic circuit and module design
- PCB design
- Design for manufacture and test
- Prototyping facilities

Alstom relays

- Sole licensee for manufacture or repair of 'Z' type relays



Production capability

Benefits

Significant investment

- Purpose designed and built production line
- LEAN manufacturing principles
- Latest technology equipment and processes

Consistent high quality

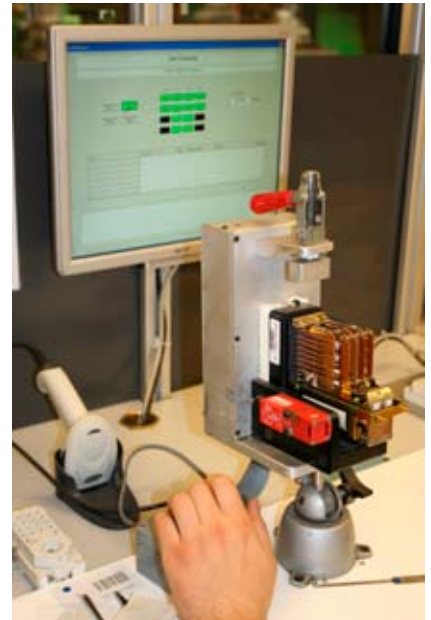
- Highly skilled workforce
- No fault forward culture
- Computer controlled workstations including setting and inspection
- Computerised automatic end of line test station
- Test results for every relay recorded and stored
- Full barcoded traceability

Flexible capacity

- Low or high volume batch runs
- Capacity readily adaptable to meet customer demand
- Rapid response to changes in delivery schedules or product mix for example
- Fast track delivery service

Production plant and process summary

- Contact block moulding machinery
- Computer controlled coil winding machines
- Automated coil printing
- Contact and spring blade riveting
- Contact setting
- Computer controlled assembly stations
- Staged inspection
- Computerised end of line tester
- Barcoded traceability
- Prototyping



In built quality

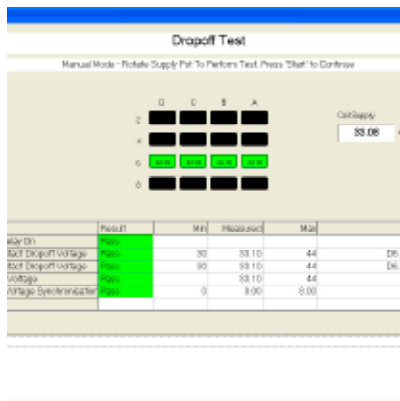
All relays are bar coded at the start of the assembly line ensuring

- Full traceability to assembly and setting personnel
- Automated relay specific setting parameters
- Automated relay specific inspection prompts
- Automated relay specific end of line testing

The following slides show examples of the operator prompts and end of line tests:

Automated setting

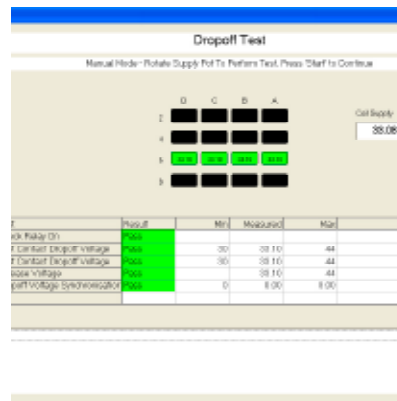
Pre programmed standards removing operator errors and giving robust pass / fail.



Manual Mode - Rotate Supply Pin To Perform Test. Press 'Start' to Continue

	D	C	B	A	
1	0	0	0	0	Call Safety
2	0	0	0	0	33.08
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	

	Pin #1	Min	Max	Min	Max
Relay On	Pass				
Relay Dropoff Voltage	Pass	30	33.10	44	DE.1
Relay Dropoff Voltage	Pass	30	33.10	44	DE.1
Dropoff	Pass		33.10	44	
Dropoff Synchronization	Pass	0	0.00	0.00	



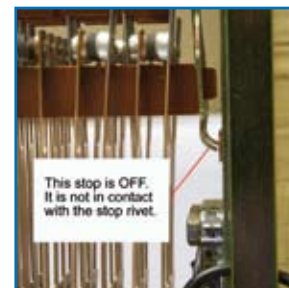
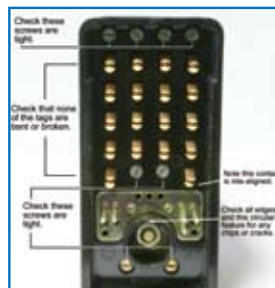
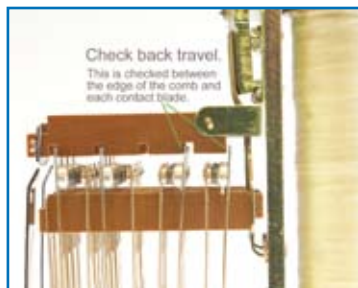
Manual Mode - Rotate Supply Pin To Perform Test. Press 'Start' to Continue

	D	C	B	A	
1	0	0	0	0	Call Safety
2	0	0	0	0	33.08
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	

	Pin #1	Min	Max	Min	Max
Relay On	Pass				
Relay Dropoff Voltage	Pass	30	33.10	44	C
Relay Dropoff Voltage	Pass	30	33.10	44	E
Dropoff	Pass		33.10	44	
Dropoff Synchronization	Pass	0	0.00	0.00	

Automated inspection

- Automated station with positive confirmation of checks
- Visual reminders of pass & fail standards



BR930 RELAY TEST REPORT EXAMPLE

Date ,20 Mar 2010
Time ,09:13:57

Base Barcode,TY159-04213327120
Variant,TY159-04
Station,2

Description,	Result,	Max,	Measured,	Min
Result,	Pass			
Test Results				
Test Pin Code,	Pass,		C,D,E,J,K,	
Screw Nut LH,	Done			
Screw Nut RH,	Done			
Wait For Safety Guard Closed,	Pass			
Test Pickup LH Coil,	Pass			
Test Dropoff LH Coil,	Pass			
Test Pickup RH Coil,	Pass			
Test Dropoff RH Coil,	Pass			
Test Contact Resistance,	Pass			
Test Contact Transition LH,	Pass			
Test Contact Transition RH,	Pass			
Test Coil Resistance,	Pass,	990.00,	912.00,	810.00
Test AC Immunity,	Skip			
Test Coil Interruption LH 150ms,	Pass			
Test Coil Interruption RH 150ms,	Pass			
Test Reverse Voltage (Front Contacts),	Skip			
Test Reverse Voltage (Back Contacts),	Skip			
Test Release 150V DC,	Skip			
Test Operate Delay Time LH(TY159),	Pass,	250.00,	187.00,	150.00
Test Operate Delay Time RH(TY159),	Pass,	250.00,	188.00,	150.00
Test Release Delay Time,	Skip			
Test Release Delay Time 1,	Skip			
Test Release Delay Time 2,	Skip			
Test Release Delay Time 3,	Skip			
Test HAL (Hi-Pot),	Pass			
Part	PASS			
000, Faults Recorded				

LH Coil Pickup Results	RH Coil Pickup Results
-----	-----
D2 = 28.75	B2 = 26.35
D4 = 28.75	B4 = 26.35
C2 = 28.75	A2 = 26.35
C4 = 28.75	A4 = 26.35

LH Coil Dropoff Results	RH Coil Dropoff Results
-----	-----
D6 = 9.50	B6 = 8.75
D8 = 9.50	B8 = 8.75
C6 = 9.50	A6 = 8.75
C8 = 9.50	A8 = 8.75

Contact Resistance			

D2 = 0.06	C2 = 0.05	B2 = 0.05	A2 = 0.04
D4 = 0.07	C4 = 0.06	B4 = 0.05	A4 = 0.04
D6 = 0.03	C6 = 0.07	B6 = 0.08	A6 = 0.03
D8 = 0.03	C8 = 0.05	B8 = 0.03	A8 = 0.04

SerialNumber: 702428



Mors Smitt Railway Technology

Q-style BR930 signalling relays

Formerly Tyer, Field & Grant, STS Rail

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