



SERVING  
SAFETY

Mors Smitt Railway Technology

# Q-style BR930 signalling relays





SERVING  
SAFETY

**Mors Smitt Railway Technology**

# Q-style BR930 signalling relays





*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 in Cradley Heath, UK. These relays are manufactured since the 1960's and have full Network Rail acceptance certification (formerly British Rail)

Formerly known as Tyer, Zone Controls, Field and Grant, STS Rail and now Mors Smitt UK, our relays have been successfully supplied throughout the world. There are over 150 relay designs currently being manufactured meeting the requirements of many railway operators including customer specific designs when needed.



## Key features

- Non-weld silver and silver impregnated carbon contact tips
- Automated operator inspection
- Automated end of line testing
- End of line test reports available on request
- Certificate of Conformity supplied with each order
- Recertification and repair services available
- Bespoke design services

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.



*Mors Smitt continuous to improve its products and services. Specifications are changed without prior notice.  
No rights can be derived from specifications in this brochure. Changes and printed errors reserved.*

# BR930 relay table

## Sorted by Q-reference

Q-reference	Catalogue number	BR cat code	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Reference
QBA1	TY084/GRP01	0085/000800	0025	12	4	24 VDC	932A	AC immune DC biased line relay	BA
QBA1	TY084/GRP02	0085/000810	0025	8	4	24 VDC	932A	AC immune DC biased line relay	BA
QBA1	TY084/GRP03	0085/000820	0026	8	8	24 VDC	932A	AC immune DC biased line relay	BA
QBA1	TY084/GRP04	0085/000830	0026	6	6	24 VDC	932A	AC immune DC biased line relay	BA
QBA1	TY084/GRP05	0085/000840	0026	4	4	24 VDC	932A	AC immune DC biased line relay	BA
QBA1	TY084/GRP06	0085/000860	0027	12	4	50 VDC	932A	AC immune DC biased line relay	BA
QBA1	TY084/GRP07	0085/000870	0027	8	4	50 VDC	932A	AC immune DC biased line relay	BA
QBA1	TY084/GRP08	0085/000880	0028	8	8	50 VDC	932A	AC immune DC biased line relay	BA
QBA1	TY084/GRP09	0085/000890	0028	6	6	50 VDC	932A	AC immune DC biased line relay	BA
QBA1	TY084/GRP10	0085/000900	0028	4	4	50 VDC	932A	AC immune DC biased line relay	BA
QBBA1	TY157/GRP01	0085/001850	0049	6	2	50 VDC	961	Twin AC immune DC biased neutral line relay	BBA
QBBA1	TY157/GRP02	0085/001860	0017	4	4	50 VDC	961	Twin AC immune DC biased neutral line relay	BBA
QBBA1	TY157/GRP03	0085/001870	0017	2	2	50 VDC	961	Twin AC immune DC biased neutral line relay	BBA
QBBA1	TY157/GRP04	0085/001810	0098	6	2	24 VDC	961	Twin AC immune DC biased neutral line relay	BBA
QBBA1	TY157/GRP05	0085/001820	0097	4	4	24 VDC	961	Twin AC immune DC biased neutral line relay	BBA
QBBA1	TY157/GRP06	0085/001830	0097	2	2	24 VDC	961	Twin AC immune DC biased neutral line relay	BBA
QBBA1	TY157/GRP08		BEFGX	6	2	12 VDC	(961)	Twin AC immune DC biased neutral line relay	
QBBA1	TY157/GRP09		ABDKS	4	4	12 VDC	(961)	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	
QBCA1	TY154/GRP02	0085/001505	0170	2H	4	24 VDC	943A	AC immune DC biased contactor relay	BCA
QBCA1	TY154/GRP03	0085/001515	0172	2H	4	50 VDC	943A	AC immune DC biased contactor relay	BCA
QCJ1	TY155/GRP01	0085/001550	6046	1	3	24 VDC	949	DC non-safety time delay relay	CJ
QCJ1	TY155/GRP02	0085/001560	6047	1	3	50 VDC	949	DC non-safety time delay relay	CJ
QCU2	TY377/GRP01		tdb	2 x 1	1 x 1	12 VDC		1 Aspect filament switching relay	
QCU2	TY377/GRP02		tbd	2 x 2	1 x 2	12 VDC		2 Aspect filament switching relay	
QCU2	TY377/GRP03		BEGHX	2 x 3	1 x 3	12 VDC		3 Aspect filament switching relay	
QCU2	TY377/GRP04		AGHKX	2 x 4	1 x 4	12 VDC		4 Aspect filament switching relay	
QEC	TY133/GRP06		T014	2	2	6.0 ADC	(940A)	DC Motor proving relay	
QEC1	TY133/GRP01	0085/001300	0081	4		2.2 ADC	940A	DC single wound lamp proving relay	EC
QEC1	TY133/GRP02	0085/001290	0081	4	2	2.2 ADC	940A	DC single wound lamp proving relay	EC
QECF1	TY133/GRP03	0085/001450	0091	4		1.5 ADC	945A	DC lamp proving relay	ECF
QECX	TY153/GRP12		T011	2		200 mAAC	(941A)	AC lamp proving relay	ECX
QECX	TY153/GRP16		AGKXY	4	4	650 mAAC	(941A)	AC lamp proving relay	ECX
QECX1	TY132/GRP02	0085/001350	0071	4		0.4 AAC	941A	AC lamp proving relay	ECX
QECX1	TY132/GRP03		0071	4	2	0.4 AAC	(941A)	AC lamp proving relay	
QECX16	TY153/GRP09		ACEKS	2		0.72 AAC	(941A)	AC lamp proving relay	
QECX19	TY153/GRP07		ADFKS	4		135 mAAC	(941A)	AC lamp proving relay	
QEECF1	TY206/GRP01	0085/001730	0030	2		1.4 A	966 F8	Twin DC lamp proving relay	EECF
QL1	TY087/GRP01	0085/001070	0009	11	4	24 VDC	935A	DC magnetically latched neutral line relay	L
QL1	TY087/GRP02	0085/001080	0011	11	4	50 VDC	935A	DC magnetically latched neutral line relay	L
QL1	TY087/GRP03		0007	8	6	24 VDC	935A	DC magnetically latched neutral line relay	L
QL1	TY087/GRP04	0085/001015	0008	8	6	50 VDC	935A	DC magnetically latched neutral line relay	L
QN	TY201/GRP01		0957	4	4	12 VDC	930	DC neutral line relay	N

# BR930 relay table

## Sorted by Q-reference



Q-reference	Catalogue number	BR cat code	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Reference
QN1	TY082/GRP01	0085/000350	0001	12	4	24 VDC	930	DC neutral line relay	N
QN1	TY082/GRP03	0085/000360	0001	8	4	24 VDC	930	DC neutral line relay	N
QN1	TY082/GRP05	0085/000370	0002	8	8	24 VDC	930	DC neutral line relay	N
QN1	TY082/GRP07	0085/000380	0002	6	6	24 VDC	930	DC neutral line relay	N
QN1	TY082/GRP09	0085/000390	0002	4	4	24 VDC	930	DC neutral line relay	N
QN1	TY082/GRP11	0085/000410	0003	12	4	50 VDC	930	DC neutral line relay	N
QN1	TY082/GRP13	0085/000420	0003	8	4	50 VDC	930	DC neutral line relay	N
QN1	TY082/GRP15	0085/000430	0004	8	8	50 VDC	930	DC neutral line relay	N
QN1	TY082/GRP17	0085/000440	0004	6	6	50 VDC	930	DC neutral line relay	N
QN1	TY082/GRP19	0085/000450	0004	4	4	50 VDC	930	DC neutral line relay	N
QNA1	TY083/GRP01	0085/000650	0021	12	4	24 VDC	931A	AC immune DC neutral line relay	NA
QNA1	TY083/GRP02	0085/000660	0021	8	4	24 VDC	931A	AC immune DC neutral line relay	NA
QNA1	TY083/GRP03	0085/000670	0022	8	8	24 VDC	931A	AC immune DC neutral line relay	NA
QNA1	TY083/GRP04	0085/000680	0022	6	6	24 VDC	931A	AC immune DC neutral line relay	NA
QNA1	TY083/GRP05	0085/000690	0022	4	4	24 VDC	931A	AC immune DC neutral line relay	NA
QNA1	TY083/GRP06	0085/000710	0023	12	4	50 VDC	931A	AC immune DC neutral line relay	NA
QNA1	TY083/GRP07	0085/000720	0023	8	4	50 VDC	931A	AC immune DC neutral line relay	NA
QNA1	TY083/GRP08	0085/000730	0024	8	8	50 VDC	931A	AC immune DC neutral line relay	NA
QNA1	TY083/GRP09	0085/000740	0024	6	6	50 VDC	931A	AC immune DC neutral line relay	NA
QNA1	TY083/GRP10	0085/000750	024	4	4	50 VDC	931A	AC immune DC neutral line relay	NA
QND	TY195/GRP01		0307	8	4	30 VDC	930	DC neutral line double wound relay	ND
QND2	TY082/GRP02	0085/000500	0001	12	4	24 VDC	930	DC neutral line double wound relay	ND
QND2	TY082/GRP04	0085/000510	0001	8	4	24 VDC	930	DC neutral line double wound relay	ND
QND2	TY082/GRP06	0085/000520	0002	8	8	24 VDC	930	DC neutral line double wound relay	ND
QND2	TY082/GRP08	0085/000530	0002	6	6	24 VDC	930	DC neutral line double wound relay	ND
QND2	TY082/GRP10	0085/000540	0002	4	4	24 VDC	930	DC neutral line double wound relay	ND
QND2	TY082/GRP12	0085/000560	0003	12	4	50 VDC	930	DC neutral line double wound relay	ND
QND2	TY082/GRP14	0085/000570	0003	8	4	50 VDC	930	DC neutral line double wound relay	ND
QND2	TY082/GRP16	0085/000580	0004	8	8	50 VDC	930	DC neutral line double wound relay	ND
QND2	TY082/GRP16	0085/000590	0004	6	6	50 VDC	930	DC neutral line double wound relay	ND
QND2	TY082/GRP20	0085/000600	0004	4	4	50 VDC	930	DC neutral line double wound relay	ND
QNDE	TY178/GRP02	0085/000630	1057	8	8	24 VDC	996 F3	DC neutral line double wound relay with medium duty back contacts	NDE
QNE	TY178/GRP01	0085/000620	1057	8	8	24 VDC	966 F3	DC neutral line relay with medium duty back contacts	NE
QNHX1	TY192/GRP01	0085/002040	0029	8	4	110 VAC	966 F7	AC neutral line relay	NHX
QNN1	TY156/GRP01	0085/001630	0212	6	2	50 VDC	960	Twin DC neutral line relay	NN
QNN1	TY156/GRP02	0085/001640	0211	4	4	50 VDC	960	Twin DC neutral line relay	NN
QNN1	TY156/GRP03	0085/001650	0211	2	2	50 VDC	960	Twin DC neutral line relay	NN
QNN1	TY156/GRP04	0085/001590	0092	6	2	24 VDC	960	Twin DC neutral line relay	NN
QNN1	TY156/GRP05	0085/001600	0057	4	4	24 VDC	960	Twin DC neutral line relay	NN
QNN1	TY156/GRP06	0085/001610	0057	2	2	24 VDC	960	Twin DC neutral line relay	NN
QNN1	TY156/GRP13	0085/001590	0092	6	2	24 VDC	960	Twin DC neutral line relay	NN
QNNA1	TY160/GRP01	0085/001665	0209	6	2	50 VDC	996 F6	Twin AC immune DC neutral line relay	NNA

# BR930 relay table

## Sorted by Q-reference

Q-reference	Catalogue number	BR cat code	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Reference
QNNA1	TY160/GRP02	0085/001660	0210	4	4	50 VDC	966 F6	Twin AC immune DC neutral line relay	NNA
QNNA1	TY160/GRP03		0210	2	2	50 VDC	966 F6	Twin AC immune DC neutral line relay	NNA
QNNA1	TY160/GRP04		0962	6	2	24 VDC	(966 F6)	Twin AC immune DC neutral line relay	
QNNA1	TY160/GRP05		0963	4	4	24 VDC	(966 F6)	Twin AC immune DC neutral line relay	
QNNA1	TY160/GRP06		0963	2	2	24 VDC	(966 f6)	Twin AC immune DC neutral line relay	
QNND1	TY156/GRP07	0085/001740	0056	6	1	50 VDC	960	Twin DC neutral line double wound relay	NND
QNND1	TY156/GRP08	0085/001750	0060	4	3	50 VDC	960	Twin DC neutral line double wound relay	NND
QNND1	TY156/GRP09	0085/001760	0060	2	1	50 VDC	960	Twin DC neutral line double wound relay	NND
QNND1	TY156/GRP10	0085/001700	0055	6	1	24 VDC	960	Twin DC neutral line double wound relay	NND
QNND1	TY156/GRP11	0085/001710	0054	4	3	24 VDC	960	Twin DC neutral line double wound relay	NND
QNND1	TY156/GRP12	0085/001720	0054	2	1	24 VDC	960	Twin DC neutral line double wound relay	NND
QNNS1	TY159/GRP01	0085/001920	0214	6	2	24 VDC	963	Twin DC slow-acting neutral line relay	NNS
QNNS1	TY159/GRP02	0085/001930	0213	4	4	24 VDC	963	Twin DC slow-acting neutral line relay	NNS
QNNS1	TY159/GRP03	0085/001950	0216	6	2	50 VDC	963	Twin DC slow-acting neutral line relay	NNS
QNNS1	TY159/GRP04	0085/001960	015	4	4	50 VDC	963	Twin DC slow-acting neutral line relay	NNS
QNNSA	TY159/GRP11		0571	6	2	24 VDC	(963)	Twin AC immune DC slow-acting neutral line relay	NNSA
QNNSA	TY159/GRP12		0570	4	4	24 VDC	(963)	Twin AC immune DC slow-acting neutral line relay	NNSA
QNNSA	TY159/GRP13	0085/001961	0573	6	2	50 VDC	(963)	Twin AC immune DC slow-acting neutral line relay	NNSA
QNNSA	TY159/GRP14	0085/001962	0572	4	4	50 VDC	(963)	Twin AC immune DC slow-acting neutral line relay	NNSA
QNX1	TY132/GRP11		BCHKX	4	2	300 mAAC	(942)	AC lamp proving relay	
QR1	TY370/GRP40		0020					Rectifier unit	
QR1	TY370/GRP41		0020					Rectifier-resistance unit 6 W	
QR1	TY370/GRP42		0020					Rectifier-resistance unit 7.8 W	
QR1	TY370/GRP43		0020					Rectifier-resistance unit 9 W	
QR1	TY370/GRP44		0020					Rectifier-resistance unit 10 W	
QR1	TY370/GRP45	0088/047217	0020					Rectifier-resistance unit 14 W	
QR1	TY370/GRP46		0020					Rectifier-resistance unit 15 W	
QR1	TY370/GRP47	0088/047011	0020					Rectifier-resistance unit 18 W	
QR1	TY370/GRP47		0020					Rectifier-resistance unit 22 W	
QR1	TY370/GRP49	0088/030749	0020					Rectifier-resistance unit 32 W	
QR1	TY370/GRP50	0088/030832	0020					Rectifier-resistance unit 51 W	
QR1	TY370/GRP51	0088/047049	0020					Rectifier-resistance unit 64 W	
QR1	TY370/GRP52		0020					Rectifier-resistance unit 81 W	
QR1	TY370/GRP53		0020					Rectifier-resistance unit 105 W	
QR1	TY370/GRP54		0020					Rectifier-resistance unit 150 W	
QR12	TY370/GRP74	0088/047078	6063					Resistor-diode unit 60 W	
QR12	TY370/GRP75	0088/047250	6063					Resistor-diode unit 190 W	
QR12	TY370/GRP75	0088/047272	6063					Resistor-diode unit 20000 W x 4	
QR12	TY370/GRP77	0088/047271	6063					Resistor-diode unit 20000 W x 2 & 190 W	
QR13	TY370/GRP69	0088/047079	6064					Resistance unit 7.8 W + 7.8 W	
QR14	TY370/GRP70	0088/000438	0156					Lamp proving relay feed unit 6 W	
QR14	TY370/GRP71	0088/047290	0156					Lamp proving relay feed unit 7.8 W	
QR14	TY370/GRP72	0088/000431	0156					Lamp proving relay feed unit 10 W	
QR14	TY370/GRP73	0088/000432	0156					Lamp proving relay feed unit 18 W	



# BR930 relay table

## Sorted by Q-reference



Q-reference	Catalogue number	BR cat code	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Reference
QR2	TY370/GRP56	0088/030857	0078					Rectifier unit	
QR2	TY370/GRP57		0078					Rectifier-resistance unit 6 W + 6 W	
QR2	TY370/GRP58		0078					Rectifier-resistance unit 7.8 W + 7.8 W	
QR2	TY370/GRP59		0078					Rectifier-resistance unit 10 W + 10 W	
QR2	TY370/GRP60		0078					Rectifier-resistance unit 14 W + 14 W	
QR2	TY370/GRP61		0078					Rectifier-resistance unit 18 W + 18 W	
QR2	TY370/GRP62		0078					Rectifier-resistance unit 22 W + 22 W	
QR2	TY370/GRP63		0078					Rectifier-resistance unit 32 W + 32 W	
QR2	TY370/GRP64		0078					Rectifier-resistance unit 51 W + 51 W	
QR2	TY370/GRP65		0078					Rectifier-resistance unit 64 W + 64 W	
QR2	TY370/GRP66		0078					Rectifier-resistance unit 81 W + 81 W	
QR2	TY370/GRP67		0078					Rectifier-resistance unit 105 W + 105 W	
QR2	TY370/GRP68		0078					Rectifier-resistance unit 150 W + 150 W	
QR5	TY370/GRP21		CDFKX			50 VDC		Resistor/capacitor circuit	
QR5	TY370/GRP22		0168			24 or 50VDC		Resistor/capacitor circuit	
QRJ1	TY163/GRP01	0085/002500	0232	1	1	22-30VDC	946	DC neutral time delay relay	RJ
QRJ1	TY163/GRP02	0085/002502	0233	1	1	22-30VDC	946	DC neutral time delay relay	RJ
QRJ1	TY163/GRP03	0085/002504	0234	1	1	22-30VDC	946	DC neutral time delay relay	RJ
QRJ1	TY163/GRP04	0085/002506	0235	1	1	22-30VDC	946	DC neutral time delay relay	RJ
QRJ1	TY163/GRP05	0085/002508	0236	1	1	22-30VDC	946	DC neutral time delay relay	RJ
QSPA1	TY085/GRP01	0085/000950	0041	8	4	24VDC	933A	AC immune DC slow pick-up neutral line relay	SPA
QSPA1	TY085/GRP02	0085/000960	0043	8	4	50VDC	933A	AC immune DC slow pick-up neutral line relay	SPA
QSRA1	TY086/GRP01	0085/001010	0061	8	4	24VDC	934A	AC immune DC slow release neutral line relay	SRA
QSRA1	TY086/GRP02	0085/001020	0063	8	4	50VDC	934A	AC immune DC slow release neutral line relay	SRA
QT	TY153/GRP06		0305	2		150 mADC	938A	DC neutral track relay	T
QT2	TY150/GRP01	0085/000200	0101	2		500 mADC	938A	DC neutral track relay	T
QT2	TY152/GRP01	0085/000300	0111	2		RU.17VDC	968	DC neutral track relay	T
QT2R	TY266/GRP01	0085/001970	0133	6	3	12VDC	Z52411	DC neutral reed follower relay	T2R
QTA2	TY153/GRP01	0085/000250	0105	2		400 mADC	939A	AC immune DC neutral track relay	TA
QTA2	TY153/GRP02	0085/000280	0110	2		400 mADC	966 F2	AC immune DC neutral track relay	TA
QTA2	TY153/GRP04	0085/000230	0104	2		10VDC	966 F9	AC immune DC neutral track relay	TA
QTA2	TY153/GRP05		0110	2	2	400 mADC	966 F2	AC immune DC neutral track relay	TA
QUCX1	TY132/GRP01	0085/001400	0070	2	2	1.4 AAC	942	AC lamp proving relay	UCX
QUCX3	TY132/GRP06		ADGHS	2	2	0.55 AAC	(942)	AC lamp proving relay	
QUCX5	TY153/GRP08		BCFGS	4	2	800 mAAC & 50VDC	(942)	AC lamp proving relay with DC latching	
QXR1	TY303/GPR01	0088/047034	6015			110VAC & 50VDC		Transformer/rectifier in a BR930 relay enclosure	
QXR1	TY303/GRP02	0088/030903	6011			110VAC & 24VDC		Transformer/rectifier in a BR930 relay enclosure	
	TY082/GRP24		T002	12	4	24VDC	(930)	DC neutral line relay	
	TY153/GRP03		0110	2	1	400 mADC	966 F2	AC immune DC neutral track relay	TA
	TY163/GRP06	0085/002509	0237	3	1	50VDC	946	DC neutral time delay relay	RJ
	TY206/GRP02	0086/023451	0062	3		2 A	966 F10	Twim DC lamp proving relay	EECF2

# BR930 relay table

## Sorted by Z-reference

Z-reference	Catalogue number	BR cat code	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Reference
ZA0011	TY150/GRP01	0085/000200	0101	2	-	500 mADC	938a	DC neutral track relay	T
ZA0021	TY152/GRP01	0085/000300	0111	2	-	P.U. 17 VDC	968	DC neutral track relay	T
ZA0051	TY153/GRP01	0085/000250	0105	2	-	400 mADC	939A	AC immune DC neutral track relay	TA
ZA0151	TY153/GRP02	0085/000280	0110	2	-	400 mADC	966 F2	AC immune DC neutral track relay	TA
ZB3521	TY084/GRP02	0085/000810	0025	8	4	24 VDC	932A	AC immune DC biased line relay	BA
ZB3622	TY084/GRP07	0085/000870	0027	8	4	50 VDC	932A	AC immune DC biased line relay	BA
ZB4521	TY084/GRP03	0085/000820	0026	8	8	24 VDC	932A	AC immune DC biased line relay	BA
ZB4622	TY084/GRP08	0085/000880	0028	8	8	50 VDC	932A	AC immune DC biased line relay	BA
ZB5521	TY084/GRP01	0085/000800	0025	12	4	24 VDC	932Z	AC immune DC biased line relay	BA
ZB5622	TY084/GRP06	0085/000860	0027	12	4	50 VDC	932A	AC immune DC biased line relay	BA
ZH4512	TY156/GRP05	0085/001600	0057	4	4	24 VDC	960	Twin DC neutral line relay	NN
ZH4612	TY156/GRP02	0085/001640	0211	4	4	50 VDC	960	Twin DC neutral line relay	NN
ZH5512	TY156/GRP04	0085/001590	0092	6	2	24 VDC	960	Twin DC neutral line relay	NN
ZH5612	TY156/GRP01	0085/001630	0212	6	2	50 VDC	960	Twin DC neutral line relay	NN
ZJ1511	ZJ1511	0085/001140	0014	4	4	24 VDC	936A	DC polarised magnetic stick line relay	PS
ZJ1611	ZJ1611	0085/001170	0016	4	4	50 VDC	936A	DC polarised magnetic stick line relay	PS
ZJ4511	ZJ4511	0085/001130	0014	8	8	24 VDC	936A	DC polarised magnetic stick line relay	PS
ZJ4611	ZJ4611	0085/001160	0016	8	8	50 VDC	936A	DC polarised magnetic stick line relay	PS
ZJ5511	ZJ5511	0085/001150	0013	12	4	24 VDC	936A	DC polarised magnetic stick line relay	PS
ZJ5611	ZJ5611	0088/044179	0015	12	4	50 VDC	936A	DC polarised magnetic stick line relay	PS
ZJ7511	TY087/GRP01	0085/001070	0009	11	4	24 VDC	935A	DC magnetically latched neutral line relay	L
ZJ7611	TY087/GRP02	0085/001080	0011	11	4	50 VDC	935A	DC magnetically latched neutral line relay	L
ZL4512	TY156/GRP11	0085/001710	0054	4	3	24 VDC	960	Twin DC neutral line double wound relay	NND
ZL4612	TY156/GRP08	0085/001750	0060	4	3	50 VDC	960	Twin DC neutral line double wound relay	NND
ZL5512	TY156/GRP10	0085/001700	0055	6	1	24 VDC	960	Twin DC neutral line double wound relay	NND
ZL5612	TY156/GRP07	0085/001740	0056	6	1	50 VDC	960	Twin DC neutral line double wound relay	NND
ZN4521	TY157/GRP05	0085/001820	0097	4	4	24 VDC	961	Twin DC immune DC biased neutral line relay	BBA
ZN4621	TY157/GRP02	0085/001860	0017	4	4	50 VDC	961	Twin DC immune DC biased neutral line relay	BBA
ZN5521	TY157/GRP04	0085/001810	0098	6	2	24 VDC	961	Twin DC immune DC biased neutral line relay	BBA
ZN5621	TY157/GRP01	0085/001850	0049	6	2	50 VDC	961	Twin DC immune DC biased neutral line relay	BBA
ZP3512	TY082/GRP04	0085/000510	0001	8	4	24 VDC	930	DC neutral line double wound relay	ND
ZP3612	TY082/GRP14	0085/000570	0003	8	4	50 VDC	930	DC neutral line double wound relay	ND
ZP4512	TY082/GRP06	0085/000520	0002	8	8	24 VDC	930	DC neutral line double wound relay	ND
ZP4612	TY082/GRP16	0085/000580	004	8	8	50 VDC	930	DC neutral line double wound relay	ND
ZP5512	TY082/GRP02	0085/000500	0001	12	4	24 VDC	930	DC neutral line double wound relay	ND
ZP5612	TY082/GRP12	0085/000560	0003	12	4	50 VDC	930	DC neutral line double wound relay	ND
ZQ1111	TY132/GRP01	0085/001400	0070	2	2	1.4 AAC	942	AC lamp proving relay	UCX
ZQ1211	TY133/GRP01	0085/001300	0081	4		2.2 ADC	940A	DC single wound lamp proving relay	EC
ZQ1411	TY133/GRP03	0085/001450	0091	4		1.5 ADC	945A	DC lamp proving relay	ECF
ZQ4011	TY132/GRP02	0085/001350	0071	4		1.4 AAC	941A	AC lamp proving relay	ECX

# BR930 relay table

## Sorted by Z-reference



Z-reference	Catalogue number	BR cat code	Pin code	Front contacts	Back contacts	Coil supply	BR specification	Description	Reference
ZQ4081	TY132/GRP04		0376	4	1	0.25 AAC		AC lamp proving relay	ECX
ZS3512	TY082/GRP03	0085/000360	0001	8	4	24 VDC	930	DC neutral line relay	N
ZS3522	TY083/GRP02	0085/000660	0021	8	4	24 VDC	931A	AC immune DC neutral line relay	NA
ZS3531	TY085/GRP01	0085/000950	0041	8	4	24 VDC	933A	AC immune DC slow pick-up neutral line relay	SPA
ZS3542	TY086/GRP01	0085/001010	0061	8	4	24 VDC	934A	AC immune DC slow release neutral line relay	SRA
ZS3612	TY082/GRP13	0085/000420	0003	8	4	50 VDC	930	DC neutral line relay	N
ZS3622	TY083/GRP07	0085/000720	0023	8	4	50 VDC	931A	AC immune DC neutral line relay	NA
ZS3631	TY085/GRP02	0085/000960	0043	8	4	50 VDC	933A	AC immune DC slow pick-up neutral line relay	SPA
ZS3642	TY086/GRP02	0085/001020	0063	8	4	50 VDC	934A	AC immune DC slow release neutral line relay	SRA
ZS3651	TY085/GRP06		0373	8	4	50 VDC	(933A)	AC immune DC slow pick-up neutral line relay	
ZS4512	TY082/GRP05	0085/000370	0002	8	8	24 VDC	930	DC neutral line relay	N
ZS4522	TY083/GRP03	0085/000670	0022	8	8	24 VDC	931A	AC immune DC neutral line relay	NA
ZS4612	TY082/GRP15	0085/000430	0004	8	8	50 VDC	930	DC neutral line relay	N
ZS4622	TY083/GRP08	0085/000730	0024	8	8	50 VDC	931A	AC immune DC neutral line relay	NA
ZS5512	TY082/GRP01	0085/000350	0001	12	4	24 VDC	930	DC neutral line relay	N
ZS5522	TY083/GRP01	0085/000650	0021	12	4	24 VDC	931A	AC immune DC neutral line relay	NA
ZS5612	TY082/GRP11	0085/000410	0003	12	4	50 VDC	930	DC neutral line relay	N
ZS5622	TY083/GRP06	0085/000710	0023	12	4	50 VDC	931A	AC immune DC neutral line relay	NA
ZT6607	TY370/GRP24					50 VDC		Resistor/capacitor circuit with diodes	
ZT6609	TY370/GRP25					50 VDC		Resistor/capacitor circuit with diodes	
ZU3521	TY154/GRP02	0085/001505	0170	2H	4	24 VDC	943A	AC immune DC biased contactor relay	BCA
ZU3621	TY154/GRP03	0085/001515	0172	2H	4	50 VDC	943A	AC immune DC biased contactor relay	BCA



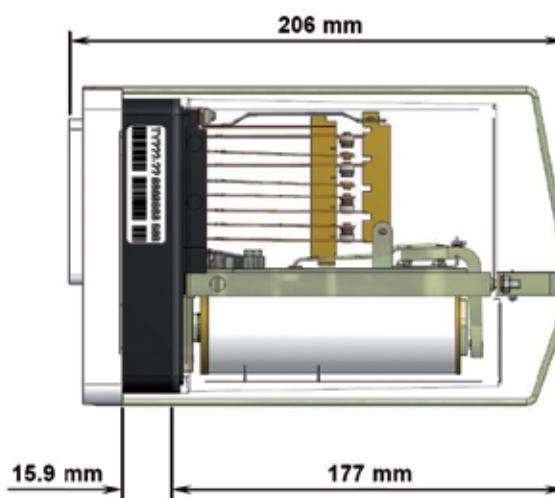
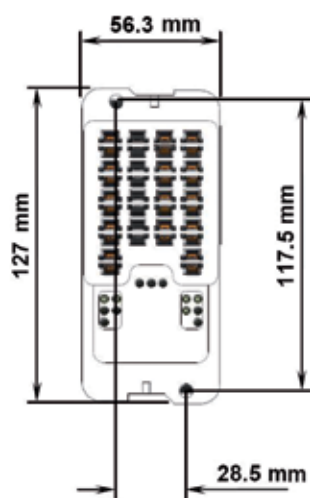
# Typical applications

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



SERVING  
SAFETY

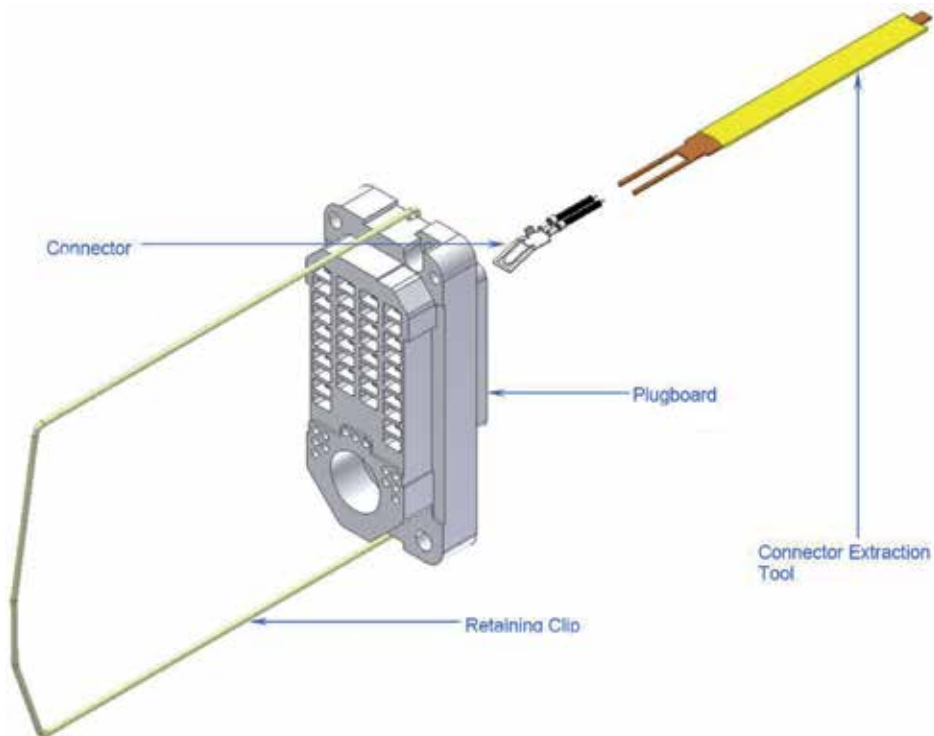
## Dimensions



# Plugboards & connectors

## Plugboards

- Available both as standard UK Network Rail and to suit GEC electrical connectors
- Available both in UK Network Rail off white and black
- Available undrilled or drilled to suit relay pin code
- Relay retaining clip / connectors available separately





## 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
- Application specific and special purpose relays
- Multi-disciplined design and engineering skills set
- Short design to manufacture lead times
- Full CAD design capability
- Electronic circuit and module design
- PCB design
- Design for manufacture and test
- Prototyping facilities

### 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

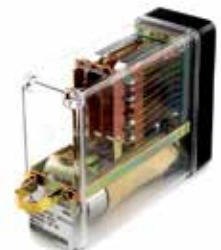
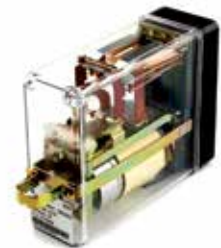
- Dedicated service department
- Repair, test and re-certification
- Short turnaround times

### Service exchange

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

### 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







# Production capability

## Automated end of line testing

- Computer controlled testing of all electrical relay parameters to BR930 standards
- Pin code and contact arrangement checks
- Test results recorded and stored
- Barcoded traceability

The screenshot shows a software window titled 'Lower Guard' with a table of test results. The table has columns for 'Test', 'Status', 'Value', 'Unit', 'Tol', and 'Pass'. The 'MORS SMITT' logo is visible at the bottom.

Test	Status	Value	Unit	Tol	Pass
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	

The screenshot shows a software window titled 'Contact Resistance' with a table of test results. The table has columns for 'Test', 'Status', 'Value', 'Unit', 'Tol', and 'Pass'. The 'MORS SMITT' logo is visible at the bottom.

Test	Status	Value	Unit	Tol	Pass
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	
AC/DC Voltage	Pass	230.00	V	±1%	

Sample test report is shown on the next page

## Despatch

- Full serial number traceability to individual packing box

## Summary

High quality, reliable approved products

Flexible modern production facility and equipment

Proven design capability for bespoke products

Comprehensive aftersales support and service





## Relay Test Report



**Organisation :** Mors Smitt UK Ltd  
**Relay Type :** BBA - TWIN A.C. IMMUNE D.C. BIASED LINE RELAY  
**Serial Number :** 001686  
**Base Bar Code :** TY157-01213902130  
**Testing Station :** ATOR-2 **Test Result :** Pass

**Test Date :** 31 Jul 2012 **Test Time :** 18:23:15  
**Reference Number :** BBA  
**Pin Code :** 0049 **Mors Smitt Ref :** TY157-01  
**Nominal Working Voltage / Current :** 50V d.c. **Pin Arrangement :** ABFHJ  
**Contact Configuration :** 6F - 2B **Coil Configuration :** Twin Coil

Test	Test Criteria	Result	Nominal	Max	Min	Measured
3-890	Test Pin Code	Pass	ABFHJ	-	-	ABFHJ
3-801	Test Pickup LH Coil	Pass	-	-	-	See Below
3-811	Test Dropoff LH Coil	Pass	-	-	-	See Below
3-801	Test Pickup LH Coil	Pass	-	-	-	See Below
3-811	Test Dropoff LH Coil	Pass	-	-	-	See Below
3-802	Test Pickup RH Coil	Pass	-	-	-	See Below
3-812	Test Dropoff RH Coil	Pass	-	-	-	See Below
3-802	Test Pickup RH Coil	Pass	-	-	-	See Below
3-812	Test Dropoff RH Coil	Pass	-	-	-	See Below
3-840	Test Coil Resistance	-	-	-	-	-
3-840- 1	R1R3	-	-	1028.50	841.50	931.55
3-840- 2	R2R4	Pass	-	1028.50	841.50	949.32
3-820	Test Contact Resistance	-	-	-	-	See Below
3-831	Test Contact TransitionLH	Pass	-	-	-	-
3-832	Test Contact TransitionRH	Pass	-	-	-	-
3-850	Test AC Immunity	Pass	-	-	-	-
3-871	Test Reverse Voltage (Back Contacts)	Pass	-	-	-	-

### Test Results

Contact	Operate (Pick Up) Value	Result	Release (Drop Away) Value	Result	Contact Resistance $\Omega$	Spring Pressure (g)	Result
A1/2	31.80	Pass		Not Required	0.01	-	Pass
A3/4	31.80	Pass		Not Required	0.01	-	Pass
A5/6		Not Required	9.60	Pass	0.02	-	Pass
A7/8		Not Required	9.60	Pass	0.02	-	Pass
B1/2	31.80	Pass		Not Required	0.02	-	Pass
B3/4	31.80	Pass		Not Required	0.01	-	Pass
B5/6	31.80	Pass		Not Required	0.01	-	Pass
B7/8	31.80	Pass		Not Required	0.02	-	Pass
C1/2	31.20	Pass		Not Required	0.02	-	Pass
C3/4	31.20	Pass		Not Required	0.02	-	Pass
C5/6	31.20	Pass		Not Required	0.02	-	Pass
C7/8	31.20	Pass		Not Required	0.01	-	Pass
D1/2	31.20	Pass		Not Required	0.02	-	Pass
D3/4	31.20	Pass		Not Required	0.02	-	Pass
D5/6		Not Required	12.00	Pass	0.02	-	Pass
D7/8		Not Required	12.00	Pass	0.02	-	Pass

Air Gap - -

## SALES OFFICES

### FRANCE

Mors Smitt SAS  
Tour Rosny 2, Avenue du Général de Gaulle,  
F - 93118 Rosny-sous-Bois Cedex, France  
T +33 (0) 1 4812 1440  
F +33 (0) 1 4855 9001  
E sales.msf@wabtec.com

### HONG KONG

Mors Smitt Asia Ltd.  
29/F., Fun Tower, 35 Hung To Road  
Kwun Tong, Kowloon, Hong Kong SAR  
T +852 2343 5555  
F +852 2343 6555  
E sales.msa@wabtec.com

### THE NETHERLANDS

Mors Smitt B.V.  
Vrieslantlaan 6  
3526 AA Utrecht, The Netherlands  
T +31 (0)30 288 1311  
F +31 (0)30 289 8816  
E sales.msbv@wabtec.com

### UNITED KINGDOM

Mors Smitt UK Ltd.  
Graycar Business Park, Barton under Needwood,  
Burton on Trent Staffordshire, DE13 8 EN, UK  
T +44 (0)1283 722 650  
F +44 (0)1283 722 651  
E sales.msuk@wabtec.com

### USA

Mors Smitt Technologies Inc.  
1010 Johnson Drive  
Buffalo Grove, IL 60089-6918, USA  
T +1 847 777 6497  
F +1 847 520 2222  
E salesmst@wabtec.com

Your local contact:

Bro-Q-style V2.6 July 2015

[www.morssmitt.com](http://www.morssmitt.com)

