

调谐电抗器 (ATR) Tuning Reactor

产品概述 (Product Introduction)

现代电力电子设备的大量使用产生的非线性电流正以谐波方式影响电网并加重电网污染，并导致电容器、变压器及传输设备过载并故障，对测量，传动，计算等设备产生的严重干扰，谐振及电压畸变还造成供电事故。串联电抗器可得以改善与避免。电容器串联电抗器后谐振频率低于系统最低（一般为5次及7次），使其在工频下呈容性，以改善功率因数，而在谐振并无放大谐波之虑，良好的阻抗匹配后，电容器组可吸收谐波电流(如5次)30%-60%。

The nonlinear currents generated by the massive use of modern power and electric equipment are impacting the power grid and aggravate its pollution in the harmonic form, cause overload failures to capacitors, transformers and transmission devices and generate serious interference to measuring, transmitting and calculating devices; in addition, resonance and voltage distortions may also result in power supply accidents, Series reactors could effectively improve or avoid such problems. After installing the capacitor and reactor in series, the resonance frequency is lower than the minimum of the system (usually 5th and 7th waves), so that compatibility is showed under power frequency and power factor is improved; meanwhile, there is no need to worry about the amplification of harmonic wave. With satisfactory impedance matching, the capacitor bank could absorb 30% to 60% of the harmonic currents (5th harmonic wave, for example).

技术规格 (Technical Specifications)

基波电流 Fundamental Current	$I_1 = 1.06 * I_R$ (I_R 为电容器额定电流 I_R is capacitor rated current) $U_3 = 0.5\% U_R$ (基波电压为100% The fundamental voltage is 100%) $U_5 = 6.0\% U_R$
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谐波电压 Harmonic voltage	$U_7 = 5.0\% U_R$ $U_{11} = 3.5\% U_R$ $U_{13} = 3.0\% U_R$
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有效电流 Effective current	$I_{RMS} = \sqrt{I_1^2 + I_3^2 + \dots + I_{13}^2}$
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线性度 Linearity	$2.08 * I_1$ $1.73 * I_1$ $1.4 * I_1$ $P=5.67\%$ $P=7\%$ $P=14\%$ $L \geq 0.95 * L_N$
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温度保护 Temperature protection	微型开关 (常闭) Miniature switch (normally closed)
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频率 Frequency	50Hz/60Hz
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电压等级 Voltage level	400V, 440V, 480V, 525V, 690V
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输出容量 Output capacity	5-100Kvar
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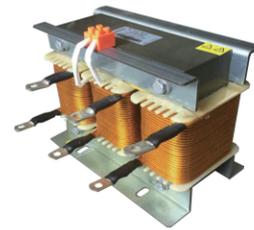
电抗率 Reactance	5.67%, 7%, 14%
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功能特点 (Functional characteristics)

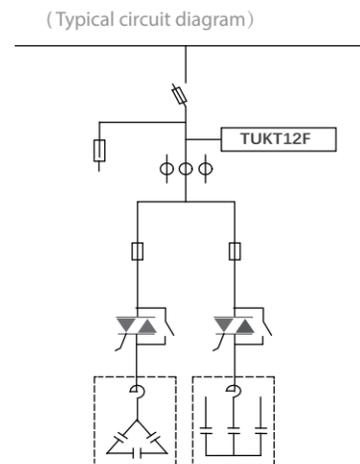
采用多段气隙 Adopt multi-section air gap	分隔芯柱 Separate core column	温度保护 Temperature protection
采用真空浸漆 Use vacuum dip paint	低噪音 Low noise	F/H级 Grade F/H
高线性度 High linearity	低损耗 Low loss	耐高温绝缘 High temperature resistant insulation

芯柱与绕组之间设置通风道散热

A ventilation channel is arranged between the core column and the winding for heat dissipation



典型电路图
(Typical circuit diagram)



调谐电抗器选型表 (Type list of tuning reactor)

三相共补 Three-phase complement 400V, 50Hz, P=7%, fr=189Hz for 480V Capacitor

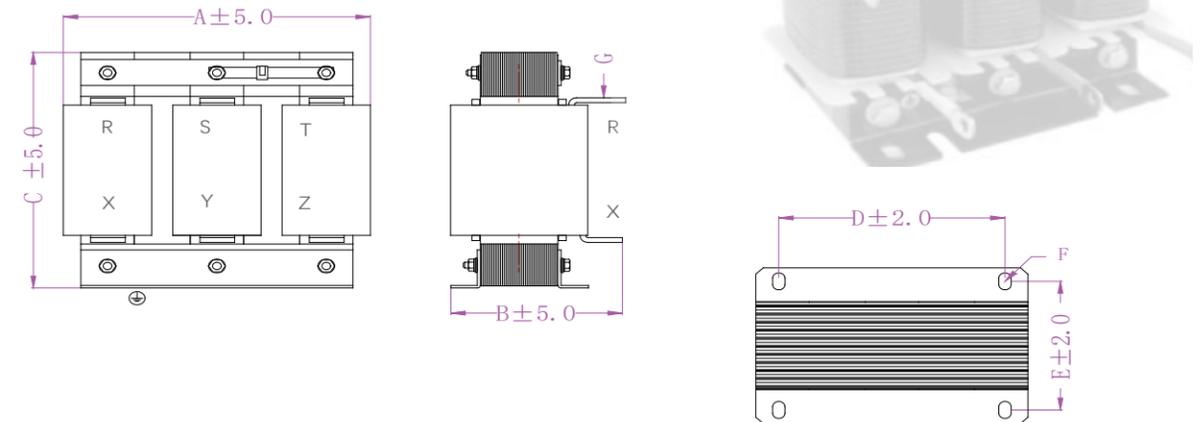
规格型号 TYPE	额定容量 Nameplate capacity (Kvar)	额定电流 Rated current (A)	额定电感 Rated inductance (mH)	外形尺寸 External dimensions (mm)						
				A	B	C	D	E	F	G
ATR-0025-2M58-0.4SAL	20	24.4	2.568	235	160	160	150	93	7*14	7.5
ATR-0031-2M05-0.4SAL	25	30.5	2.054	235	160	160	150	93	7*14	7.5
ATR-0037-1M73-0.4SAL	30	36.6	1.712	235	150	160	150	93	7*14	7.5
ATR-0050-1M29-0.4SAL	40	48.8	1.285	255	185	215	150	125	9*17	10.5
ATR-0061-1M03-0.4SAL	50	61.0	1.028	255	185	215	150	125	9*17	10.5
ATR-0074-0M86-0.4SAL	60	73.3	0.856	250	185	215	150	125	9*17	10.5

三相共补 Three-phase complement 400V, 50Hz, P=14%, fr=134Hz for 525V Capacitor

规格型号 TYPE	额定容量 Nameplate capacity (Kvar)	额定电流 Rated current (A)	额定电感 Rated inductance (mH)	外形尺寸 External dimensions (mm)						
				A	B	C	D	E	F	G
ATR-0028-4M92-0.4SAL	25	27.5	4.916	255	185	215	150	125	9*17	10.5
ATR-0042-3M28-0.4SAL	37	41.2	3.279	285	190	215	175	125	9*17	10.5
ATR-0055-2M46-0.4SAL	50	55.0	2.457	300	190	215	175	125	9*17	10.5
ATR-0083-1M64-0.4SAL	75	82.4	1.640	335	190	255	175	150	11*18	12.5

备注：其他规格尺寸，可根据用户要求制造。Remark: Dimension can be customization

调谐电抗器外形尺寸 (External dimension of tuning reactor)



成品识别码 (Product Identification Code)

ATR	—	0037	—	1M73	—	0.4SAL
调谐电抗器 Tuning Reactor		额定电流 Rated Current		电感量 Inductance		0.4: Working Voltage 0.2=220V, 0.4=380V, 0.7=690V, 1.1=1140V S: Single Phase Reactor S=Three Phase Reactor C: Copper A: Aluminium