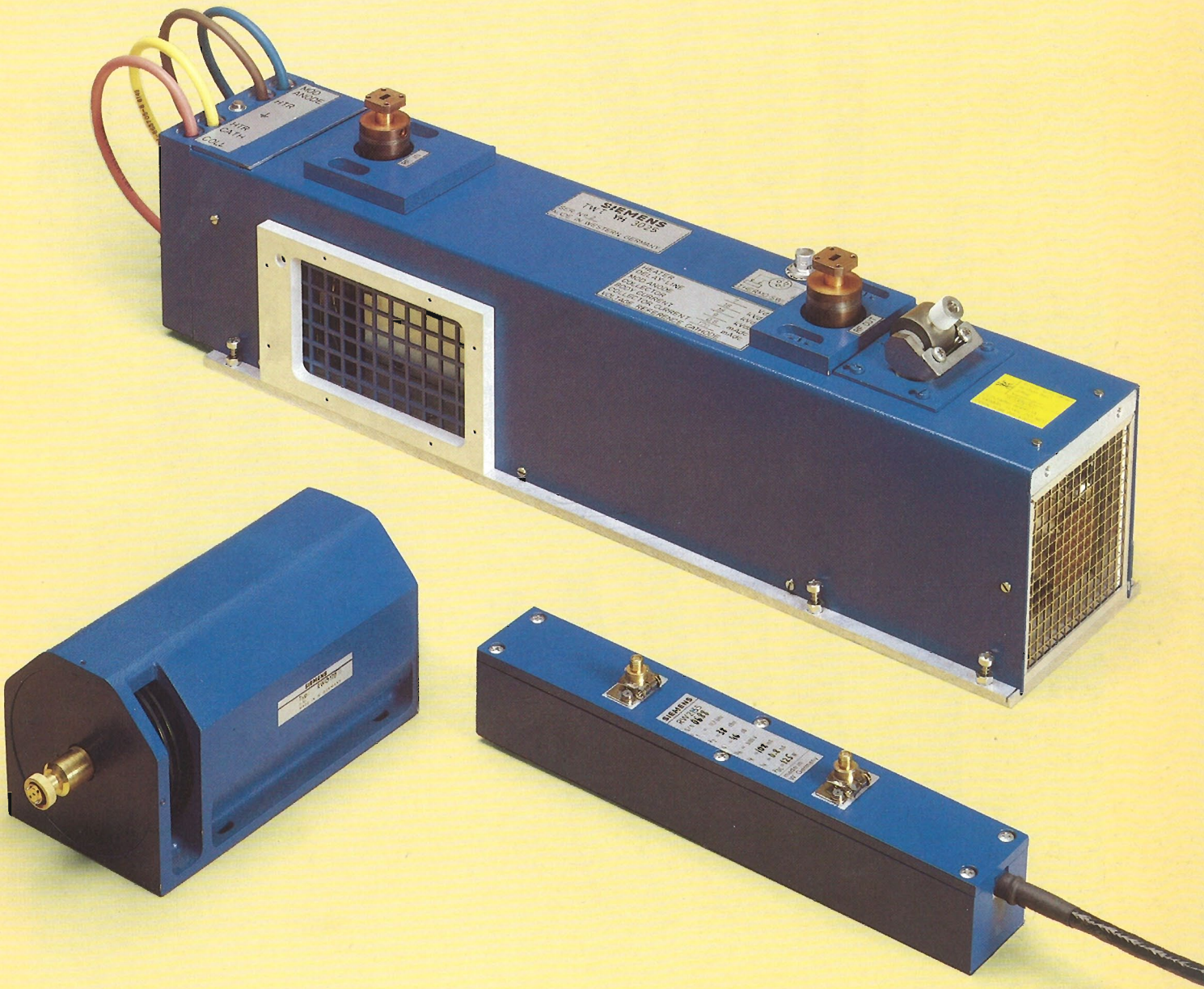
SIEMENS

Traveling Wave Tube Amplifiers Backward Wave Oscillators

Short Form Catalog 1986



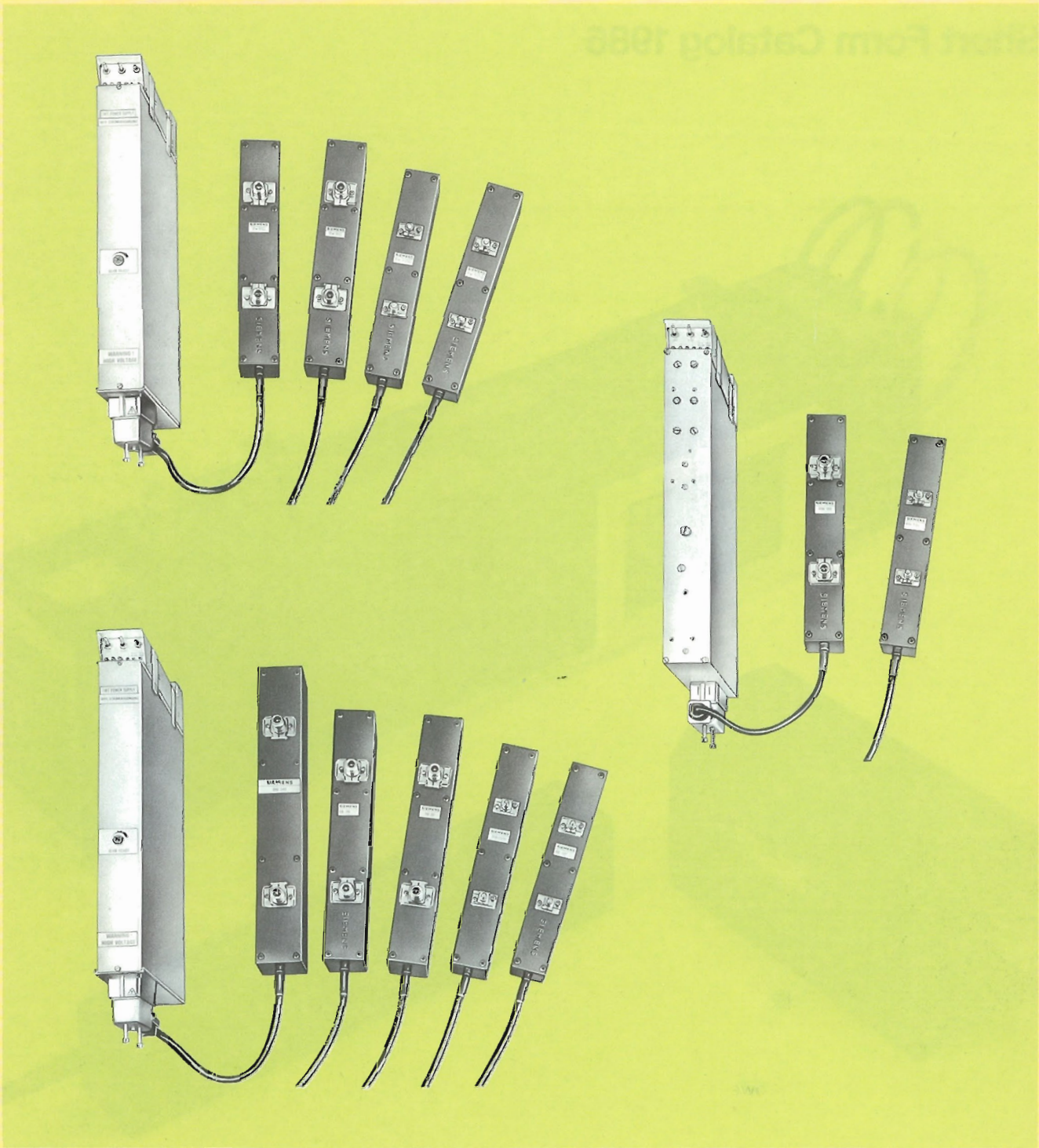
Traveling Wave Tube Amplifiers

State-of-the-art radio link transmission systems such as phase-coded digital modulation with high spectrum efficiency, single-sideband modulation and amplitude-modulated TV signal transmission require traveling wave tube amplifiers featuring high linearity.

Modular traveling wave tube amplifiers (TWTAs) consist of traveling wave tube, power supply and control unit.

These traveling wave tubes feature high linearity and stability as regards their gain characteristic under long-term conditions and ambient temperature variations.

The power supply units are equipped with an integrated preregulator assuring operation at input voltages between 24 and 60 V without switching. The operating voltages for the various tubes and operating conditions are adjusted by internal programming using a microswitch. The power supply units are designed for heat dissipation/mounting at front or rear, the two versions only differing in the position of the switch for setting the collector current.
The plug-in control unit comprises switches, control indicators and tip jacks.



For analog and 8 PSK digital radio link systems

Type	Ordering code	Frequency range GHz	Application/ Modulation	Output power W	Gain dB	AM/PM conversion °/dB	3rd order intercept point min. dBm
RW 89D	Q41-X3283	5.9... 7.1	A/FM	15	40	2.5	45.5
			D/8 PSK	3	46	1.2	46
RW 90D	Q41-X3275	7.1... 8.5	A/FM	15	40	3	45.5
			D/8 PSK	3	46	1.5	46
RW 1125D	Q41-X3281	10.7...13.2	A/FM	15	40	3	46
			D/8 PSK	3	46	1.5	46.5
RW 1125G	Q41-X3301	10.7...13.2	A/FM	20	41	3	46
RWN 120	Q87-X344	Power supply unit, operating voltage 24 to 60 V, heat dissipation at front					
RWN 121	Q87-X318	Power supply unit, operating voltage 24 to 60 V, heat dissipation at rear					
BT 300	Q87-X355	Control unit					

For 16 QAM digital and single-sideband (SSB) radio link systems

Type	Ordering code	Frequency range GHz	Application/ Modulation	Output power dBm	Gain dB	AM/PM conversion °/dB	3rd order intercept point min. dBm
RW 189	Q41-X3302	5.9... 6.4	SSB/AM	30	45	0.4	49
		5.9... 7.1	D/16 QAM	35	42.5	0.6	48
RW 1136	Q41-X3314	10.7...11.7	D/16 QAM	35	46	0.8	48
RWN 220	Q87-X349	Power supply unit, operating voltage 24 to 60 V, heat dissipation at front					
RWN 221	Q87-X323	Power supply unit, operating voltage 24 to 60 V, heat dissipation at rear					
BT 300	Q87-X355	Control unit					

For 64 QAM digital and AM/TV radio link systems

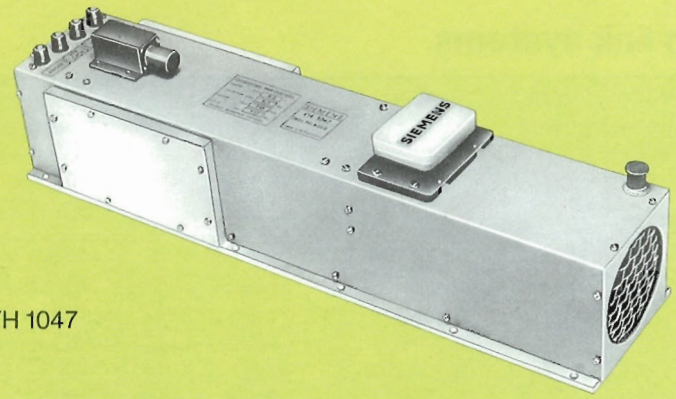
Type	Ordering code	Frequency range GHz	Application/ Modulation	Output power dBm	Gain dB	AM/PM conversion °/dB	3rd order intercept point min. dBm
RW 248	Q41-X3311	3.6... 4.2	D/64 QAM	36	46	0.4	51
RW 289	Q41-X3310	5.9... 7.1	D/64 QAM	36	46	0.4	51
RW 290	Q41-X3315	7.1... 8.5	D/64 QAM	36	46	0.4	51
RW 2135	Q41-X3307	10.7...11.7	D/64 QAM	36	46	0.5	51
RW 1127	Q41-X3312	11.7...13.2	TV/AM	3.5*)	37.5	0.5	51.4
RWN 320	Q87-X317	Power supply unit, operating voltage 24 to 60 V, heat dissipation at front					
RWN 321	Q87-X322	Power supply unit, operating voltage 24 to 60 V, heat dissipation at rear					
BT 300	Q87-X355	Control unit					

*) Picture synchronization power in W

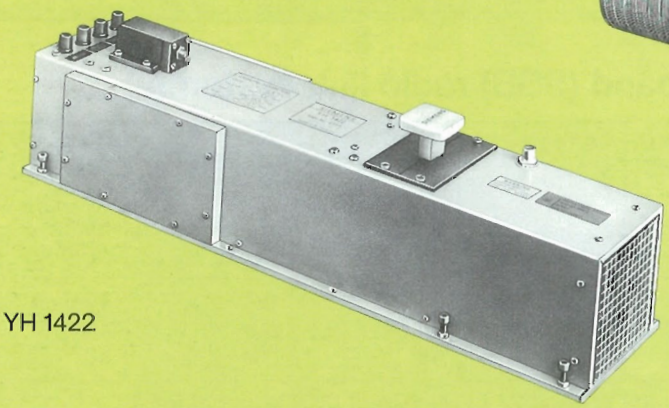
High-Power Traveling Wave Tubes

Compact high-power traveling wave tubes are available for application in present and future satellite transmission systems on international and regional level. The beam-focusing structure, consisting of a PPM system using samarium cobalt magnets, is integrated in the tube. The slow-wave structure is designed either in helix or coupled-cavity technique, depending on the frequency and performance required.

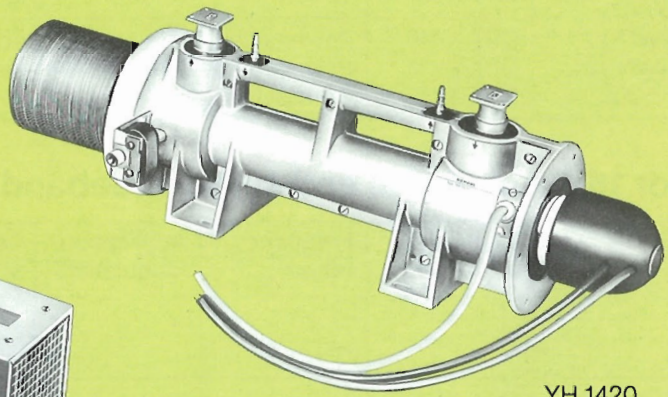
TWTs feature high amplification with only minor variations in the frequency band. The use of Siemens metal capillary dispenser cathodes ensures high reliability and stability as well as long service life. The tubes are used for single-carrier and multi-carrier operation and provide good transmission characteristics with analog and digital modulation (FM, FDM, TDMA).



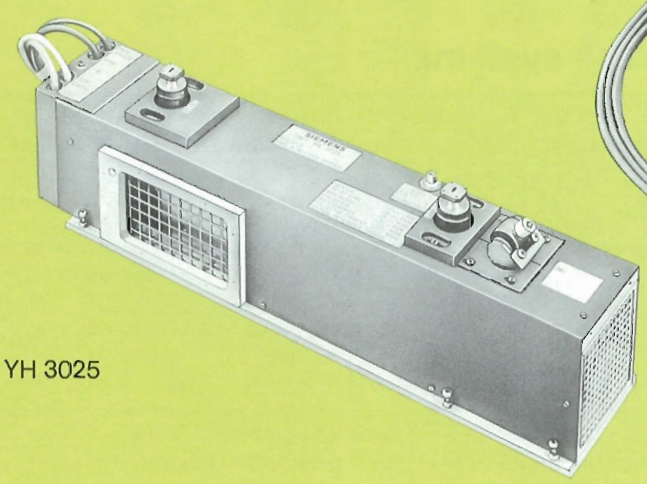
YH 1047



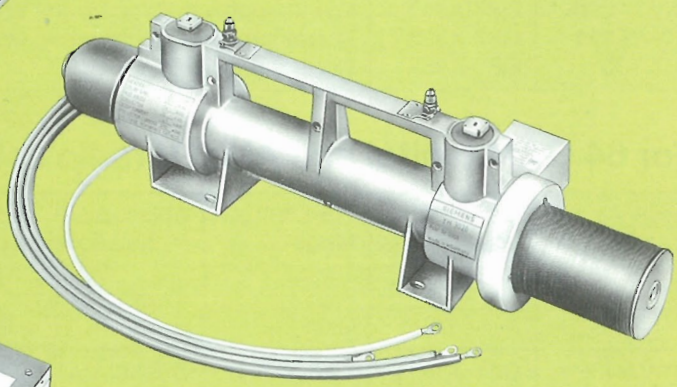
YH 1422



YH 1420



YH 3025



YH 3020

For 6 GHz satellite earth stations

Type	Ordering code	Frequency range GHz	Output power W	Gain dB	AM/PM-conversion °/dB	Cooling
YH 1047-A1	Q42-X4659	5.925...6.425	600	46	1.5	Forced-air flow
YH 1047-A2	Q42-X4661	5.925...6.425	700	46	2	Forced-air flow

For 14 GHz satellite earth stations

Type	Ordering code	Frequency range GHz	Output power W	Gain dB	AM/PM-conversion °/dB	Cooling
YH 1422	Q42-X4625	14.0...14.5	300	50	3	Forced-air flow
YH 1420	Q42-X4619	14.0...14.5	2300	45	3	Forced-air flow/ water

For 30 GHz satellite earth stations

Type	Ordering code	Frequency range GHz	Output power W	Gain dB	AM/PM-conversion °/dB	Cooling
YH 3025	Q42-X4626	27.5...29.5	350	50	5	Forced-air flow
YH 3020	Q42-X4621	28.7...30.0	1300	45	5	Forced-air flow/ water

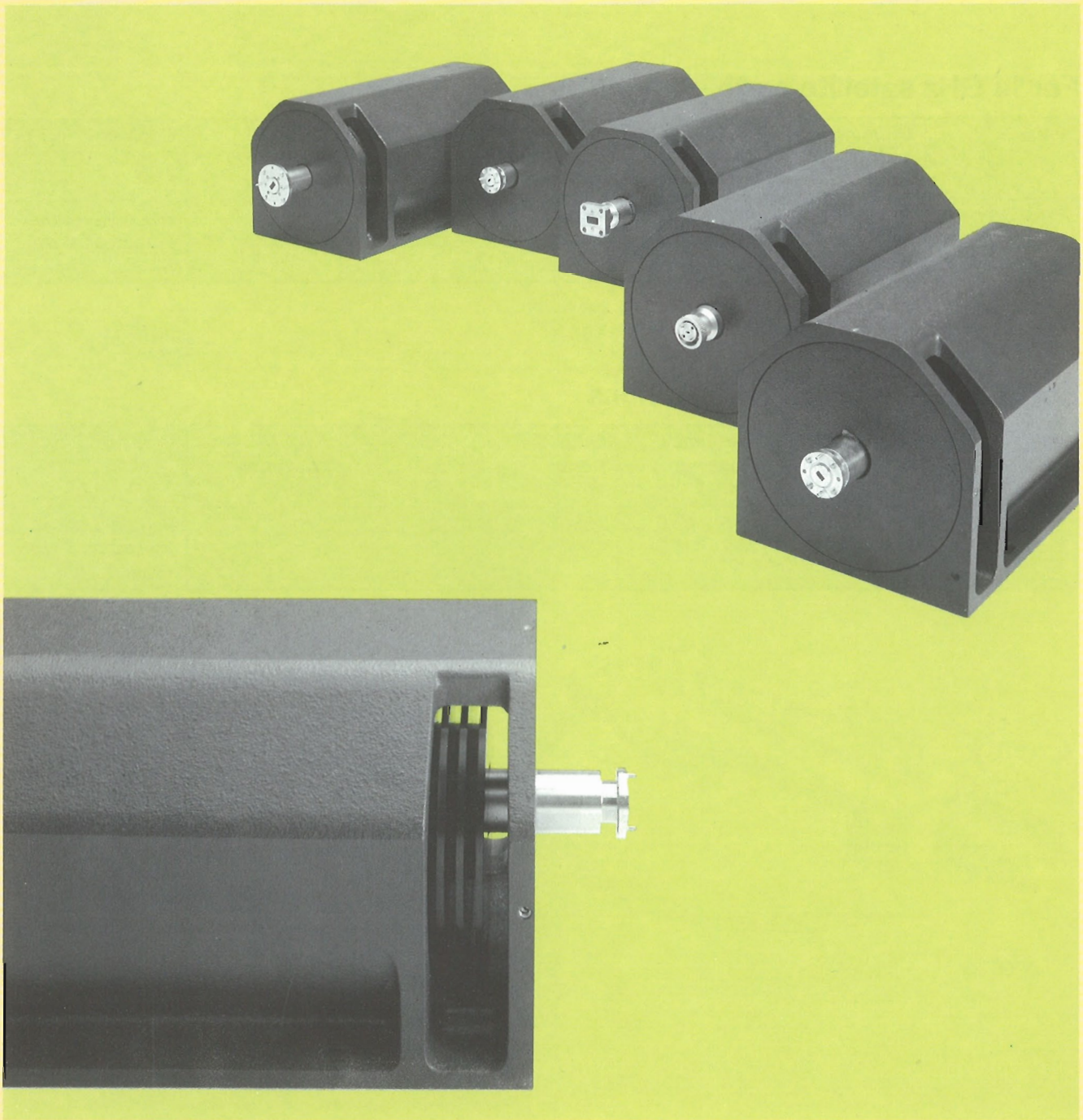
Backward Wave Oscillators

Backward wave oscillators are microwave oscillators suitable for versatile applications and cover a wide frequency range.

The slow-wave structure is designed in coupled-cavity technique. The electron beam is focused by samarium cobalt magnets. Their small, compact construction allows direct installation in standard measuring systems.

Typical fields of application are RF measuring systems, physical and chemical research and radar systems.

These oscillators have the advantage that they can be easily tuned over broad frequency ranges by varying the slow-wave structure voltage. Furthermore, the BWOs can be amplitude and frequency-modulated or swept without any difficulty.



For microwave measuring systems

Type	Ordering code	Frequency range GHz	Output power min./max. mW	Slow-wave structure voltage V	RF connection	
					Wave-guide	Flange
RWO 35S	Q46-X3331	23... 35	50/150	500...2600	WR 34	UG 599/U
RWO 50S	Q46-X3328	33... 50	30/100	500...2600	WR 22	UG 383/U
RWO 75S	Q46-X3323	50... 75	10/40	500...2600	WR 15	UG 385/U
RWO 110S	Q46-X3332	75...110	5/20	500...2600	WR 10	UG 387/U
RWO 170	Q46-X3330	110...170	1/10	500...2800	WR 6	MIL-F-3922/74-002

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