



| 2 | ANTENNA MASTS

Antenna masts are an integral part of EMC and RF measurement systems. innco systems masts are renowned worldwide as the standard benchmark. Available in manual or automatic, using either pneumatic and or electric drives, the antenna mast design has the capacity to carry antennas of 6 kgs (MM) and 10 kgs (MA) as standard. Higher loads are available upon request.

Unique designs with integrated pneumatic compressors, high speed, high accuracy, twin mast, bore site function and loads as high as 30 kgs, are all part of innco systems supplied products, to a worldwide customer listing.

MINI MAST (MM)

- 1000...4000 mm electrical height adjustment
- Pneumatic polarisation
- 6 kg load



ELECTRICAL POLARISATION (MA-EP)

- 1000...6000 mm electrical height adjustment
- Electric polarisation
- 10 kg load



| 2.1 | PRODUCT OVERVIEW

PNEUMATIC POLARISATION (MA-PP)

- 1000...6000 mm electrical height adjustment
- Pneumatic polarisation
- 10 kg load



TWIN PNEUMATIC POLARISATION (MA-TTP)

- 1000...6000 mm electrical height adjustment
- Pneumatic polarisation
- 10 kg load
- Second antenna support



DEGREEWISE POLARISATION (MA-EP-DG)

- 1000...6000 mm electrical height adjustment
- Polarisation 0°...360° (1° steps)
- 10 kg load



ANTENNA MAST (MA-XP-ET)

- 1000...6000 mm electrical height adjustment
- Pneumatic polarisation
- 12°...45° tilt angle
- 10 kg load



TWIN MAST WITH ELECTRICAL POLARISATION (TW-EP)

- 1000...10000 mm electrical height adjustment
- Electric polarisation
- 20 kg load



TWIN MAST WITH PNEUMATIC POLARISATION (TW-PP)

- 1000...6000 mm electrical height adjustment
- Pneumatic polarisation
- 20 kg load





| 2.2 | MINI MAST (MM)

The Mini Mast is suitable for use in either open areas or in electromagnetic absorption chambers. Guy wires and anchoring pins are available for antenna installation in open areas. It has no metal parts above the drive unit. Special designs are available upon request. The mast tube can be delivered in 2 separate parts for easy transportation and storage.

Adapters for all commercially available antennas are available. Special designs are available on request. All antennas rotate around their own axis during polarisation to eliminate any elevation errors.

Limit switches and the general mechanical design ensure a reliable system operation.

The GPIB (IEEE 488) & LAN (TCP/IP) bus, when operated with the CO 3000 Controller, provides an additional control option for all functions.

MINI MAST (MM)

Type	Description	Article No.
MM 2000-PP	Electric height adjustment 1000...2000 mm, max. load 6 kg PP = Pneumatic Polarisation	80000168
MM 4000-PP	Electric height adjustment 1000...4000 mm, max. load 6 kg	80000073

ACCESSORIES

Type	Description	Article No.
-MT	Manual tilt – bore sight – option	80000337
-MP	Optional manual polarisation	80004904
-PR 7/16	Polarisation rod for 7/16 antenna connector	80600029

SCOPE OF DELIVERY

Type	Quantity
Interface to CO 3000	1 x
Power supply cable	1 x 5 m
Fiber optic cable	2 x 5 m, 1 x 10 m
FSMA	4 x
Pneumatic tube	1 x 12 m
Pneumatic wall-panel bulkhead fitting	1 x
Pressure reducing valve	1 x
Polarisation rod shifttable	450 mm
Operating manual	1 x

TECHNICAL DATA

TYPE	MM 2000-PP	MM 4000-PP
Antenna height	1000...2000 mm	1000...4000 mm
Total mast height	2300 mm	4300 mm
Material	PVC + GFK, weatherproof	
Mast cross-section	60 mm x 60 mm	
Base L x W	800 mm x 600 mm	
Antenna weight	max. 6 kg (at the end of the antenna pipe)	
Positioning speed adjustable	2...16 cm / sec	
Positioning accuracy	typical ± 2 mm	
Polarisation	0° / 90° (vert. / hor.)	
Polarisation time 0° / 90°	approx. 4 sec (at 6 bar)	
Polarisation drive	pneumatic rotation cylinder	
Mast drive	1 toothed belt (Kevlar® cord reinforced)	
Air pressure	min. 6 bar	
Control	microcontroller & solenoid valve	
Operating voltage	230 V 50 / 60 Hz (optional 110 V)	
Current consumption	max. 1.6 A	
Temperature range	+8 °C...+40 °C	





| 2.3 | ELECTRICAL POLARISATION (MA-EP)

The MA-EP antenna masts are suitable for use in either open areas or in electromagnetic absorption chambers. Guy wires and anchoring pins are available for antenna installation in open areas. Metal parts are located only in the base plate and the drive mechanism (max. 0.3 m above ground level).

Adapters for all commercially available antennas are available. Special designs are available on request. All antennas during polarisation rotate around their axis so as to eliminate any elevation errors.

Limit switches and the general mechanical design ensure a reliable system operation.

The GPIB (IEEE 488) & LAN (TCP/IP) bus, when operated with the CO 3000 Controller, provides an additional control option for all functions.

ANTENNA MASTS WITH ELECTRICAL POLARISATION (MA-EP)

Type	Description	Article No.
MA 2000-EP	Electric height adjustment 1000...2000 mm, max. load 10 kg EP = Electrical Polarisation	80000273
MA 4000-EP	Electric height adjustment 1000...4000 mm, max. load 10 kg	80000074
MA 6000-EP	Electric height adjustment 1000...6000 mm, max. load 10 kg	80000075

ACCESSORIES

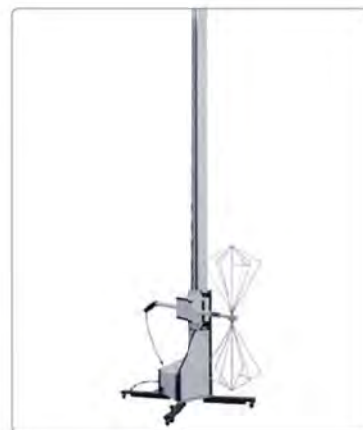
Type	Description	Article No.
-O	OATS version for MA series	80000331
-PP	Optional pneumatic polarisation	80004906
-XP	Optional pneumatic polarisation by internal compressor	80005650
-MT	Optional manual tilt bore sight (only with -PP)	80000337
-HK	Hand crank for height adjustment (without drive unit)	80004907
-15kg	Max. antenna load up to 15 kg incl. CW5	80004908
-HS	Max. antenna mast speed up to 25 cm/s	80005564
-CISPR16	Antenna rod extend to 2000 mm	80005111
-PR 7/16	Polarisation rod for 7/16 antenna connector	80600029

SCOPE OF DELIVERY

Type	Quantity
Interface to CO 3000	1 x
Power supply cable	1 x 5 m
Fiber optic cable	2 x 5 m, 1 x 10 m
FSMA	4 x
Polarisation rod shiftable	450 mm
Operating manual	1 x

TECHNICAL DATA

TYPE	MA 2000-EP	MA 4000-EP	MA 6000-EP
Antenna height	1000...2000 mm	1000...4000 mm	1000...6000 mm
Total mast height	2600 mm	4600 mm	6600 mm
Material	PVC + fiber glass, weatherproof		
Mast cross-section	100 mm x 100 mm		
Base L x W	1080 mm x 1080 mm		
Antenna weight	max. 10 kg (15 kg available)		
Positioning speed adjustable	1...12 cm / sec (15 or 25 cm / sec available)		
Positioning accuracy	better ± 10 mm		
Polarisation	0° / 90° (vert. / hor.)		
Positioning time 0° / 90°	approx. 3 sec		
Antenna support drive	2 toothed belts (Kevlar® cord reinforced)		
Motor	electronic EC motor 150 W		
Control cable	fiber optic (polymer type)		
Drive unit	shielded and radio interference suppressed 20 dB under Class B		
Total weight	70 kg	75 kg	80 kg
Operating voltage	230 V 50 / 60 Hz (optional 110 V)		
Current consumption	max. 1.6 A		
Temperature range	+8 °C...+40 °C		





| 2.4 | PNEUMATIC POLARISATION (MA-PP)

The MA-PP antenna masts are suitable for use in either open areas or in electromagnetic absorption chambers. Guy wires and anchoring pins are available for antenna installation in open areas. Metal parts are located only in the base plate and the drive mechanism (max. 0.3 m above ground level).

Adapters for all commercially available antennas are available. Special designs are available on request. All antennas during polarisation rotate around their axis so as to eliminate any elevation errors.

Limit switches and the general mechanical design ensure a reliable system operation.

The GPIB (IEEE 488) & LAN (TCP/IP) bus, when operated with the CO 3000 Controller, provides an additional control option for all functions.

ANTENNA MASTS WITH PNEUMATIC POLARISATION (MA-PP)

Type	Description	Article No.
MA 4000-PP	Electric height adjustment 1000...4000 mm, max. load 10 kg PP = Pneumatic Polarisation	80006714
MA 6000-PP	Electric height adjustment 1000...6000 mm, max. load 10 kg	80007156

ACCESSORIES

Type	Description	Article No.
-O	OATS version for MA series	80000331
-XP	Optional pneumatic polarisation by internal compressor	80005650
-MT	Optional manual tilt bore sight (only with -PP)	80000337
-HK	Hand crank for height adjustment (without drive unit)	80004907
-15kg	Max. antenna load up to 15 kg incl. CW5	80004908
-HS	Max. antenna mast speed up to 25 cm/s	80005564
-CISPR16	Antenna rod extend to 2000 mm	80005111
-PR 7/16	Polarisation rod for 7/16 antenna connector	80600029

SCOPE OF DELIVERY

Type	Quantity
Interface to CO 3000	1 x
Power supply cable	1 x 5 m
Fiber optic cable	2 x 5 m, 1 x 10 m
FSMA	4 x
Pneumatic tube	1 x 12.5 m
Pneumatic wall-panel bulkhead fitting	1 x
Pressure reducing valve	1 x
Polarisation rod shiftable	450 mm
Operating manual	1 x

TECHNICAL DATA

TYPE	MA 4000-PP	MA 6000-PP
Antenna height	1000...4000 mm	1000...6000 mm
Total mast height	max. 4600 mm	max. 6600 mm
Material	PVC + fiber glass, weatherproof	
Mast cross-section	100 mm x 100 mm	
Base L x W	1080 mm x 1080 mm	
Antenna weight	max. 10 kg (15 kg available)	
Positioning speed adjustable	1...12 cm / sec (15 or 25 cm / sec available)	
Positioning accuracy	better $\pm$ 10 mm ($\pm$ 2 mm)	
Polarisation	0° / 90° (vert. / hor.)	
Polarisation drive	pneumatic rotation cylinder	
Positioning time 0° / 90°	approx. 4 sec (at 6 bar)	
Antenna support drive	1 toothed belt (Kevlar® cord reinforced)	
Motor	electronic EC motor 150 W	
Control cable	fiber optic (polymer type)	
Drive unit	shielded and radio interference suppressed 20 dB under Class B	
Operating voltage	230 V 50 / 60 Hz (optional 110 V)	
Current consumption	max. 1.6 A	
Temperature range	+8 °C...+40 °C	





| 2.5 | TWIN PNEUMATIC POLARISATION (MA-TPP)

The MA-TPP antenna masts are suitable for use in either open areas or in electromagnetic absorption chambers. Guy wires and anchoring pins are available for antenna installation in open areas. Metal parts are located only in the base plate and the drive mechanism (max. 0.3 m above ground level).

Adapters for all commercially available antennas are available. Special designs are available on request. All antennas during polarisation rotate around their axis so as to eliminate any elevation errors.

Limit switches and the general mechanical design ensure a reliable system operation.

The GPIB (IEEE 488) & LAN (TCP/IP) bus, when operated with the CO 3000 Controller, provides an additional control option for all functions.

ANTENNA MASTS WITH TWIN PNEUMATIC POLARISATION (MA-TPP)

Type	Description	Article No.
MA 4000-TPP	Electric height adjustment 1000...4000 mm, max. load 10 kg TPP = Twin Pneumatic Polarisation	80007163
MA 6000-TPP	Electric height adjustment 1000...6000 mm, max. load 10 kg	80007164

ACCESSORIES

Type	Description	Article No.
-O	OATS version for MA series	80000331
-XP	Optional pneumatic polarisation by internal compressor	80005650
-MT	Optional manual tilt bore sight (only with -PP)	80000337
-HK	Hand crank for height adjustment (without drive unit)	80004907
-15kg	Max. antenna load up to 15 kg incl. CW5	80004908
-HS	Max. antenna mast speed up to 25 cm/s	80005564
-CISPR16	Antenna rod extend to 2000 mm	80005111
-PR 7/16	Polarisation rod for 7/16 antenna connector	80600029

SCOPE OF DELIVERY

Type	Quantity
Interface to CO 3000	1 x
Power supply cable	1 x 5 m
Fiber optic cable	2 x 5 m, 1 x 10 m
FSMA	4 x
Pneumatic tube	1 x 12.5 m
Pneumatic wall-panel bulkhead fitting	1 x
Polarisation rod shiftable	450 mm
Operating manual	1 x

TECHNICAL DATA

TYPE	MA 4000-TPP	MA 6000-TPP
Antenna height	1000...4000 mm	1000...6000 mm
Total mast height	max. 4600 mm	max. 6600 mm
Material	PVC + fiber glass, weatherproof	
Mast cross-section	100 mm x 100 mm	
Base L x W	1080 mm x 1080 mm	
Antenna weight	max. 10 kg (15 kg available)	
Positioning speed adjustable	1...12 cm / sec (15 or 25 cm / sec available)	
Positioning accuracy	better ± 10 mm (± 2 mm)	
Polarisation	0° / 90° (vert. / hor.)	
Polarisation drive	pneumatic rotation cylinders	
Positioning time 0° / 90°	approx. 4 sec (at 6 bar)	
Second Antenna Support		
Adjustable direction	0° (parallel) to 10°	
Rod shiftable	approx. 300 mm	
Antenna support drive	1 toothed belt (Kevlar® cord reinforced)	
Motor	electronic EC motor 150 W	
Control cable	fiber optic (polymer type)	
Drive unit	shielded and radio interference suppressed 20 dB under Class B	
Operating voltage	230 V 50 / 60 Hz (optional 110 V)	
Current consumption	max. 1.6 A	
Temperature range	+8 °C...+40 °C	





| 2.6 | DEGREEWISE POLARISATION (MA-EP-DG)

The MA-EP-DG antenna masts are suitable for use in either open areas or in electromagnetic absorption chambers. Guy wires and anchoring pins are available for antenna installation in open areas. Metal parts are located only in the base plate and the drive mechanism (max. 0.3 m above ground level).

Adapters for all commercially available antennas are available. Special designs are available on request. All antennas during polarisation rotate around their axis so as to eliminate any elevation errors.

Limit switches and the general mechanical design ensure a reliable system operation.

The GPIB (IEEE 488) & LAN (TCP/IP) bus, when operated with the CO 3000 Controller, provides an additional control option for all functions.

ANTENNA MASTS WITH DEGREEWISE POLARISATION (MA-EP-DG)

Type	Description	Article No.
MA 4000-EP-DG	Electric height adjustment 1000...4000 mm, max. load 10 kg EP = Electric Polarisation DG = Degreewise Polarisation	80005578
MA 6000-EP-DG	Electric height adjustment 1000...6000 mm, max. load 10 kg	80005579

ACCESSORIES

Type	Description	Article No.
-O	OATS version for MA series	80000331
-MT	Optional manual tilt bore sight (only with -PP)	80000337
-HK	Hand crank for height adjustment (without drive unit)	80004907
-15kg	Max. antenna load up to 15 kg incl. CW5	80004908
-HS	Max. antenna mast speed up to 25 cm/s	80005564
-CISPR16	Antenna rod extend to 2000 mm	80005111
-PR 7/16	Polarisation rod for 7/16 antenna connector	80600029

SCOPE OF DELIVERY

Type	Quantity
Interface to CO 3000	2 x
Power supply cable	1 x 5 m
Fiber optic cable	4 x 5 m, 2 x 10 m
FSMA	8 x
Polarisation rod shiftable	450 mm
Operating manual	1 x

TECHNICAL DATA

TYPE	MA 4000-EP-DG	MA 6000-EP-DG
Antenna height	1000...4000 mm	1000...6000 mm
Total mast height	max. 4600 mm	max. 6600 mm
Material	PVC + fiber glass, weatherproof	
Mast cross-section	100 mm x 100 mm	
Base L x W	1080 mm x 1080 mm	
Antenna weight	max. 10 kg (15 kg available)	
Positioning speed adjustable between	3 to 12 cm / sec	
Positioning accuracy	better $\pm$ 10 mm	
Polarisation	0°...360° (1° steps)	
Positioning time 0°...360°	approx. 10 sec	
Polarisation accuracy	better $\pm$ 1°	
Antenna support drive	2 toothed belts (Kevlar® cord reinforced)	
Motor	electronic EC motor 150 W	
Control cable	fiber optic (polymer type)	
Drive unit	shielded and radio interference suppressed 20 dB under Class B	
Operating voltage	230 V 50 / 60 Hz (optional 110 V)	
Current consumption	max. 2.2 A	
Temperature range	+8 °C...+40 °C	





| 2.7 | ANTENNA MASTS (MA-XP-ET)

The MA-XP-ET antenna masts are compliant with CISPR 16-1-4 BORESIGHT requirements. Metal parts are located only in the base plate and the drive mechanism (max. 0.4 m above ground level). Limit switches and the general mechanical design provide a safe system operation.

The separate controlled motors support simultaneous movement with both independent changing of height and tilt and also an automatic but configurable link of both values. (tilt while height change).

The GPIB (IEEE 488) & LAN (TCP/IP) bus, when operated with the CO 3000 Controller, provides an additional control option for all functions.

ANTENNA MASTS (MA-XP-ET)

Type	Description	Article No.
MA4640-XP-ET	Electric height adjustment 1000...4000 mm (tilted), 1000...4640 mm (not tilted), max. load 10 kg XP = Pneumatic Polarisation by internal compressor (no compressed air needed) ET = Electric Tilt adjustment	80006803
MA6000-XP-ET	Electric height adjustment 1000...5400 mm (tilted), 1000...6000 mm (not tilted), max. load 10 kg	80005544

ACCESSORIES

Type	Description	Article No.
-O	OATS version for MA series	80000331
-MT	Optional manual tilt bore sight (only with-PP or -XP)	80000337
-HK	Hand crank for height adjustment (without drive unit)	80004907
-15kg	Max. antenna load up to 15 kg incl. CW5	80004908
-HS	Max. antenna mast speed up to 25 cm/s	80005564
-CISPR16	Antenna rod extend to 2000 mm	80005111
-PR 7/16	Polarisation rod for 7/16 antenna connector	80600029

SCOPE OF DELIVERY

Type	Quantity
Interface to CO 3000	2 x
Power supply cable	1 x 5 m
Fiber optic cable	4 x 5 m, 2 x 10 m
FSMA	8 x
Polarisation rod shiftable	450 mm
Operating manual	1 x

TECHNICAL DATA

TYPE		MA 4640-XP-ET	MA 6000-XP-ET
Antenna height (horizontal)	tilted	1000 ... 4000 mm ¹	1000 ... 5400 mm
	not tilted	1000 ... 4640 mm	1000 ... 6000 mm
Total mast height		max. 5200 mm	max. 6600 mm
Antenna weight		max. 10 kg	
Material		PVC + RFP, weatherproof	
Mast cross-section		100 mm x 100 mm	
Base L x W		1080 mm x 1080 mm	
Positioning speed adjustable		1 ... 12 cm / sec (15 or 20 cm / sec available)	
Positioning accuracy		better $\pm$ 3 mm	
Pneumatic polarisation		0° / 90° (vert. / hor.)	
Positioning time 0° / 90°		approx. 4 sec	
Polarisation accuracy		better $\pm$ 0.1°	
Air pressure needed		none (internal DC compressor)	
Tilt angle		-12° ... 45°	
Tilt speed		7.5° / sec	
Tilt accuracy		better $\pm$ 0.5°	
Antenna support drive		2 toothed belts (Kevlar® cord reinforced)	
Motor		2 electronic EC motors (max. 150 W)	
		separate controlled for simultaneous movements	
Control		microcontroller	
Control modes supported in CO 3000 controller		> independent height / tilt changing > real height related tilt changing (configurable) > optional longitudinal compensation	
Control cable		fiber optic (polymer type)	
Drive unit		shielded and radio interference suppressed	
		20 dB under Class B of CISPR 22	
Operating voltage		230 V 50 / 60 Hz (optional 110 V)	
Current consumption		max. 2.2 A	
Temperature range		+8 °C ... +40 °C	

¹ Height of antennas reference point for a distance of 900 mm from mast tube (pole)





| 2.7 | ANTENNA MASTS (MA-XP-ET-0800)

The MA-XP-ET-0800 antenna masts are compliant with CISPR 16-1-4 BORESIGHT requirements. Metal parts are located only in the base plate and the drive mechanism (max. 0.4 m above ground level). Limit switches and the general mechanical design provide a safe system operation.

The separate controlled motors support simultaneous movement with both independent changing of height and tilt and also an automatic but configurable link of both values. (tilt while height change).

The GPIB (IEEE 488) & LAN (TCP/IP) bus, when operated with the CO 3000 Controller, provides an additional control option for all functions.

ANTENNA MASTS (MA-XP-ET-0800)

Type	Description	Article No.
MA4640-XP-ET-0800	Electric height adjustment 1000...4000 mm (tilted), 800...4640 mm (not tilted), max. load 10 kg XP = Pneumatic Polarisation by internal compressor (no compressed air needed) ET = Electric Tilt adjustment	80007055
MA6000-XP-ET-0800	Electric height adjustment 1000...5400 mm (tilted), 800...6000 mm (not tilted), max. load 10 kg	80007149

ACCESSORIES

Type	Description	Article No.
-O	OATS version for MA series	80000331
-MT	Optional manual tilt bore sight (only with -PP or -XP)	80000337
-HK	Hand crank for height adjustment (without drive unit)	80004907
-15kg	Max. antenna load up to 15 kg incl. CW5	80004908
-HS	Max. antenna mast speed up to 25 cm/s	80005564
-CISPR16	Antenna rod extend to 2000 mm	80005111
-PR 7/16	Polarisation rod for 7/16 antenna connector	80600029

SCOPE OF DELIVERY

Type	Quantity
Interface to CO 3000	2 x
Power supply cable	1 x 5 m
Fiber optic cable	4 x 5 m, 2 x 10 m
FSMA	8 x
Polarisation rod shiftable	450 mm
Operating manual	1 x

TECHNICAL DATA

TYPE		MA 4640-XP-ET-0800	MA 6000-XP-ET-0800
Antenna height (horizontal)	tilted	1000 ... 4000 mm ¹	1000 ... 5400 mm
	not tilted	800 ... 4640 mm	800 ... 6000 mm
Total mast height		max. 5200 mm	max. 6600 mm
Antenna weight		max. 10 kg	
Material		PVC + RFP, weatherproof	
Mast cross-section		100 mm x 100 mm	
Base L x W		1080 mm x 1080 mm	
Positioning speed adjustable		1 ... 12 cm / sec (15 or 20 cm / sec available)	
Positioning accuracy		better $\pm$ 3 mm	
Pneumatic polarisation		0° / 90° (vert. / hor.)	
Positioning time 0° / 90°		approx. 4 sec	
Polarisation accuracy		better $\pm$ 0.1°	
Air pressure needed		none (internal DC compressor)	
Tilt angle		-12° ... 45°	
Tilt speed		7.5° / sec	
Tilt accuracy		better $\pm$ 0.5°	
Antenna support drive		2 toothed belts (Kevlar® cord reinforced)	
Motor		2 electronic EC motors (max. 150 W)	
		separate controlled for simultaneous movements	
Control		microcontroller	
Control modes supported in CO 3000 controller		> independent height / tilt changing > real height related tilt changing (configurable) > optional longitudinal compensation	
Control cable		fiber optic (polymer type)	
Drive unit		shielded and radio interference suppressed	
		20 dB under Class B of CISPR 22	
Operating voltage		230 V 50 / 60 Hz (optional 110 V)	
Current consumption		max. 2.2 A	
Temperature range		+8 °C ... +40 °C	

¹ Height of antennas reference point for a distance of 900 mm from mast tube (pole)





| 2.8 | TWIN MASTS WITH ELECTRICAL POLARISATION (TW-EP)

The TW-EP antenna masts are suitable for use in either open areas or in electromagnetic absorption chambers. Metal parts are located only in the base plate and the drive mechanism (max. 0.4 m above ground level).

Adapters for all commercially available antennas are available. Special design on request. All antennas during polarisation rotate around their axis so as to eliminate any elevation errors. Limit switches and the general mechanical design ensures a reliable system operation.

The GPIB (IEEE 488) & LAN (TCP/IP) bus, when operated with the CO 3000 Controller, provides an additional control option for all functions.

TWIN MASTS WITH ELECTRICAL POLARISATION (TW-EP)

Type	Description	Article No.
TW 4000-EP	Electric height adjustment 1000...4000 mm, max. load 20 kg EP = Electrical Polarisation,	80000076
TW 6000-EP	Electric height adjustment 1000...6000 mm, max. load 20 kg	80005545
TW 10000-EP-OATS	Electric height adjustment 1000...10000 mm, max. load 20 kg	80600005

ACCESSORIES

Type	Description	Article No.
-HS	Max. antenna mast speed up to 25 cm/s	80005233
-XP	Integrated compressor for TW-PP	80002537
-CISPR16	Antenna rod extend to 2000 mm	80005111
-PR 7/16	Polarisation rod for 7/16 antenna connector	80600029

SCOPE OF DELIVERY

Type	Quantity
Interface to CO 3000	1 x
Power supply cable	1 x 5 m
Fiber optic cable	2 x 5 m, 1 x 10 m
Fiber optic cable TW 10000-EP-OATS	1 x 10 m, 1 x 20 m
FSMA	4 x
FSMA TW 10000-EP-OATS	2 x
Polarisation rod shiftable	450 mm
Operating manual	1 x

TECHNICAL DATA

TYPE	TW 4000-EP	TW 6000-EP	TW 10000-EP-OATS
Antenna height	1000...4000 mm	1000...6000 mm	1000...10000 mm
Total mast height	max. 4600 mm	max. 6600 mm	max. 10600 mm
Material	PVC + GFK, weatherproof		
Mast cross-section	(2 x) 100 mm x 100 mm		
Base L x W	1200 mm x 1000 mm	1200 mm x 1000 mm	1410 mm x 1280 mm
Antenna weight	max. 20 kg (25 kg available)		
Positioning speed adjustable	4 ... 14 cm / sec (20 or 25 cm / sec available)		
Positioning accuracy	better $\pm$ 5 mm		
Polarisation electric	0° / 90° (vert. / hor.)		
Positioning time 0° / 90°	approx. 4 sec		
Polarisation accuracy	$\pm$ 0.5°		
Antenna support drive	3 toothed belts (Kevlar® cord reinforced)		
Motor	electronic EC motor 300 W		
Control cable	fiber optic (polymer type)		
Control	microcontroller by fiber optic (polymer type)		
Drive unit	shielded and radio in- terference suppressed 20 dB under Class B	shielded and radio in- terference suppressed 20 dB under Class B	shielded and radio in- terference suppressed 20 dB under Class B & for Open Area Test Site sealed
Operating voltage	230 V 50 / 60 Hz (optional 110 V)		
Current consumption	max. 3.2 A		
Temperature range	+8 °C...+40 °C	+8 °C...+40 °C	-5 °C...+40 °C





| 2.9 | TWIN MASTS WITH PNEUMATIC POLARISATION (TW-PP)

The TW-PP antenna masts are suitable for use in either open areas or in electromagnetic absorption chambers. Metal parts are located only in the base plate and the drive mechanism (max. 0.4 m above ground level).

Adapters for all commercially available antennas are available. Special designs on request. All antennas during polarisation rotate around their axis so as to eliminate any elevation errors. Limit switches and the general mechanical design ensures a reliable system operation.

The GPIB (IEEE 488) & LAN (TCP/IP) bus, when operated with the CO 3000 Controller, provides an additional control option for all functions.

TWIN MASTS WITH PNEUMATIC POLARISATION (TW-PP)

Type	Description	Article No.
TW 4000-PP-ET	Electric height adjustment 1000...4000 mm, max. load 15 kg PP = Pneumatic Polarisation ET = Electric Tilt adjustment	80005683
TW 6000-PP-ET	Electric height adjustment 1000...6000 mm, max. load 15 kg	80000339
TW 10000-PP-OATS	Electric height adjustment 1000...10000 mm, max. load 20 kg	80000999

ACCESSORIES

Type	Description	Article No.
-HS	Max. antenna mast speed up to 25 cm/s	80005233
-XP	Integrated compressor for TW-PP	80002537
-CISPR16	Antenna rod extend to 2000 mm	80005111
-PR 7/16	Polarisation rod for 7/16 antenna connector	80600029

SCOPE OF DELIVERY

Type	Quantity
Interface to CO 3000	1 x
Power supply cable	1 x 5 m
Fiber optic cable	2 x 5 m, 1 x 10 m
Fiber optic cable TW 10000-PP-OATS	1 x 10 m, 1 x 20 m
FSMA	4 x
FSMA TW 10000-PP-OATS	2 x
Pneumatic tube	1 x 12.5m
Pneumatic wall-panel bulkhead fitting	1 x
Pressure reducing valve	1 x
Polarisation rod shiftable	450 mm
Operating manual	1 x

TECHNICAL DATA			
TYPE	TW 4000-PP-ET	TW 6000-PP-ET	TW 10000-PP-OATS ¹
Antenna height	1000...4000 mm	1000...6000 mm	1000...10000 mm
Total mast height	max. 4600 mm	max. 6600 mm	max. 10600 mm
Material	PVC + GFK, weatherproof		
Mast cross-section	(2 x) 100 mm x 100 mm		
Base L x W	1200 mm x 1000 mm	1200 mm x 1000 mm	1410 mm x 1280 mm
Antenna weight	max. 15 kg (25 kg available)	max. 15 kg (25 kg available)	max. 20 kg
Positioning speed adjustable	4...14 cm / sec (20 or 25 cm / sec available)		
Positioning accuracy	better $\pm$ 5 mm		
Polarisation pneumatic	0° / 90° (vert. / hor.)		
Polarisation drive	pneumatic rotation cylinder		
Tilt angle	0° to 45° (in 1° steps adjustable)	0° to 45° (in 1° steps adjustable)	–
Tilt speed	1° / sec	1° / sec	–
Tilt accuracy	$\pm$ 0.5°	$\pm$ 0.5°	–
Positioning time 0° / 90°	approx. 4 sec		
Polarisation accuracy	better $\pm$ 0.5°		
Antenna support drive	2 toothed belts (Kevlar® cord reinforced)	3 toothed belts (Kevlar® cord reinforced)	2 toothed belts (Kevlar® cord reinforced)
Motor	electronic EC motor 300 W		
Control cable	fiber optic (polymer type)		
Control	microcontroller by fiber optic line		
Drive unit	shielded and radio in- terference suppressed 20 dB under Class B	shielded and radio in- terference suppressed 20 dB under Class B	shielded and radio in- terference suppressed 20 dB under Class B & for Open Area Test Site sealed
Pressure	min. 6 bar		
Operating voltage	230 V 50 / 60 Hz (optional 110 V)		
Current consumption	max. 3.2 A		
Temperature range	+8 °C...+40 °C	+8 °C...+40 °C	-5 °C...+40 °C

¹ OATS accessories: guy wires; integrated, temperature controlled heater; rain protection cover; stainless steel support; sealed drive unit

