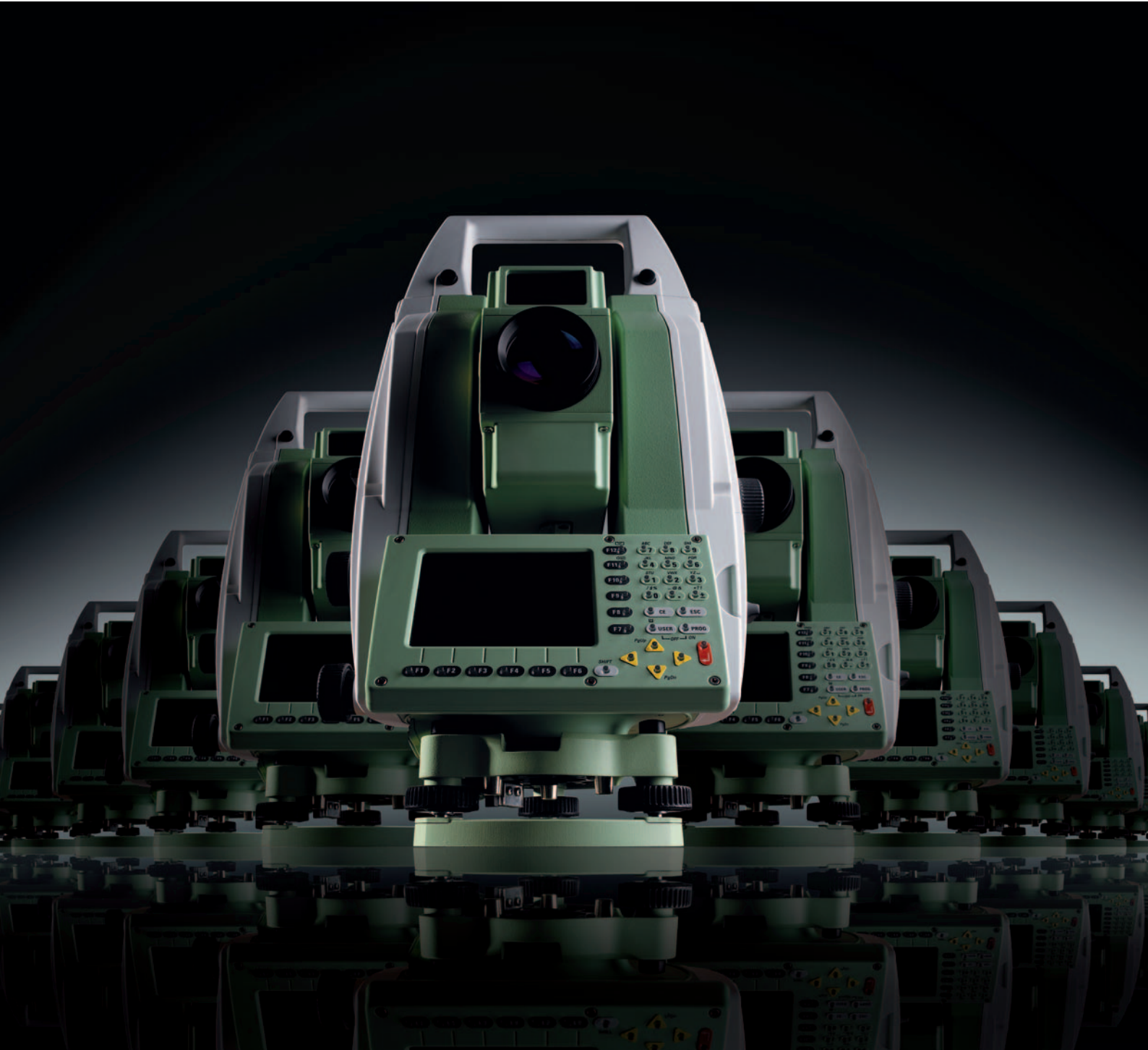


Leica TS30 and TM30 Equipment List



- when it has to be **right**

Leica
Geosystems

Table of Contents

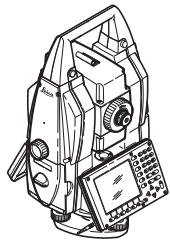
Total Station	5
1 Total Station	5
1.1 Models	5
1.2 Angular Accuracies	5
2 Additional Options	6
2.1 Touch Screen, Second Keyboard	6
2.2 Producer Certificates	6
2.3 Calibration Certificates	6
3 SmartWorx TPS Application Programs & Software Options	7
3.1 SmartWorx TPS Application Programs	7
3.2 SmartWorx TPS Application Programs, Standard	7
3.3 SmartWorx TPS Application Programs, Optional	7
3.4 Software Options	7
3.5 Optional Licences for SmartStation Setups	7
Accessories for Total Station	8
4 Accessory Sets	8
5 Power Supply	8
5.1 Internal Batteries	8
5.2 External Batteries	8
5.3 Battery Cables	8
5.4 Battery Chargers	8
6 Data Storage and Data Transfer	8
6.1 CompactFlash Card	8
6.2 Card Reader & Adapter	8
6.3 Data Transfer Cables	9
7 Optical Accessories	9
7.1 Eyepiece	9
7.2 Autocollimation Set	9
7.3 Objective	9
8 Instrument Height Meter	9
9 Tribrachs	9
10 Tripods	10
11 Reflector Poles	10
11.1 Standard Poles	10
11.2 Hidden Point Pole	10
11.3 Mini Pole	10
12 Reflector Carriers	10
13 Reflectors	11
13.1 Circular Reflectors	11
13.2 360° Reflectors	11
13.3 Precision Reflectors	11
13.4 Mini Reflectors	11
13.5 Reflector Tapes	11
14 Additional Containers	11
Remote Control	12
15 Remote Control	12
15.1 Remote Control Sets	12
15.2 CS10/CS15 Radio Field Controller	12
16 Connector Modules for CS10/CS15	12
17 SmartWorx Viva Software and Application Programs	13
17.1 SmartWorx Viva Software for CS10/CS15	13
17.2 Applications Included with SmartWorx Viva	13
17.3 Additional SmartWorx Viva Software Packages	14
17.4 Optional Applications for SmartWorx Viva	14
17.5 Optional Licences for CS10/CS15 Controller	14
17.6 SmartWorx Viva PC Software	14

Accessories for Remote Control	15
18 Accessories for Remote Control	15
18.1 Internal Batteries	15
18.2 Memory Devices	15
18.3 Card Reader & Adapter	15
18.4 Docking Station	15
18.5 Additional Power Accessories	15
18.6 Pole Accessories for CS10/CS15 Field Controller	15
18.7 Softbags and Hand Strap for CS10/CS15 Field Controller	16
18.8 RH15 RadioHandle	16
18.9 TCPS28 Modems	16
18.10 TCPS28 Accessories	16
18.11 Cables for CS10/CS15 Field Controller and TCPS28 Radio Modems	16
SmartStation	17
19 SmartStation Setup using GS09 Antenna	17
19.1 GS09 Antenna	17
19.2 Additional TPS Software Options for GS09 Receiver	17
19.3 SmartAntenna Adapter	17
19.4 Satellite Radio Modems	17
19.5 Pacific Crest Radio Modems	18
19.6 Mobile Phones	18
19.7 Antennas for Radio Modems and Mobile Phones	18
19.8 Container for GS09 Antenna & SmartStation Accessories	18
20 SmartStation & Smartpole Setup using a GS12 GNSS Receiver	18
20.1 GS12 GNSS Receiver	18
20.2 SmartAntenna Adapter	18
20.3 Additional CS Options for GS12 GNSS SmartPole Setup	19
20.4 Additional TPS Options for GS12 SmartStation Setup	19
20.5 Power Supply	19
20.6 Satellite Radio Modems	20
20.7 Pacific Crest Radio Modems	20
20.8 Mobile Phones	20
20.9 Antennas for Radio Modems and Mobile Phones	21
20.10 Container for GS12 Receiver	21
21 SmartStation Setup using GS15 GNSS Receiver	22
21.1 GS15 GNSS Receiver	22
21.2 SmartAntenna Adapter	22
21.3 Additional GS15 Receiver Options	23
21.4 RTK Modems	23
21.5 External RTK Antennas	24
21.6 Memory Devices	24
21.7 Card Reader	24
21.8 Power Supply	24
22 Additional Containers	24
Care Packages	25
23 Customer Care Packages	25
Suggested Equipment Setups	26
24 Conventional Surveying	26
25 Robotic Surveying	27
26 SmartPole Surveying	28
26.1 SmartPole using the GS12 GNSS Receiver	28
26.2 SmartPole using the GS15 GNSS Receiver	29
27 SmartStation	30
27.1 Using the GS09 Antenna	30
27.2 Using the GS12 Antenna	31
27.3 Using the GS15 Antenna	32

Total Station

1 Total Station

1.1 Models



	TS30	TM30
Angle measurement	●	●
Distance measurement to reflector (IR-Mode)	●	●
Dist. meas. without reflector (RL-Mode)	●	●
Motorised	●	●
Automatic Target Recognition (ATR)	●	
Long Range Automatic Target Recognition (ATR)		●
PowerSearch (PS)	●	
Guide Light (EGL)	●	
Radio Field Controller CS10/CS15	○	○
SmartStation GS09 receiver	○	○
SmartStation GS12 receiver	○	○
SmartStation GS15 receiver	○	○
✎ Requires CS10/CS15 Field Controller.		

● Standard
 ○ Optional

1.2 Angular Accuracies

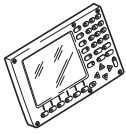
		TS30	TM30
0.5"	(0.15mgon)	757 130	757 129
1"	(0.3mgon)	-	764 824

✎ TS30 total stations are delivered with two keyboards with touch screen, Communication side cover, internal memory 256MB, standard applications, user manual and upright container GVP648.

✎ TM30 total stations are delivered with one keyboard with touch screen, Communication side cover, internal memory 256MB, standard applications, user manual and upright container GVP648.

2 Additional Options

2.1 Touch Screen, Second Keyboard



769 992	GTS23	2nd keyboard with touch screen and colour display, for TPS1200+/TM30 instruments, for telescope position 2, fitted.
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2.2 Producer Certificates



366 358	GDI33	Producer Certificate O, all main products.
559 655	GDI35	Producer Inspection Certificate M for theodolites and total stations: Angle.
663 177	GDI46	Producer Inspection Certificate M for total stations: Distance measurement to prisms.
366 359	GDI34	Producer Inspection Certificate M for total stations: Angle and Distance measurement to prisms.
723 945	GDI51	Producer Inspection Certificate M for total stations: Distance measurement to prisms and to any surfaces (reflectorless).
723 946	GDI52	Producer Inspection Certificate M for total stations: Angle and Distance measurement to prisms and to any surfaces (reflectorless).

2.3 Calibration Certificates



757 424	GDI58	Calibration Certificate for electronic total stations - Swiss accredited Calibration Laboratory: Angle Hz and V.
757 425	GDI59	Calibration Certificate for electronic total stations - Swiss accredited Calibration Laboratory: Angle Hz, V and Distance measurement to prism.
777 783	GDI61	Calibration Certificate for electronic total stations - Swiss accredited Calibration Laboratory: Angle Hz, V, Distance measurement to prism and to any surface (reflectorless).

3 SmartWorx TPS Application Programs & Software Options

3.1 SmartWorx TPS Application Programs

	Setup includes: <ul style="list-style-type: none">• Get station coordinates from GPS, from job or enter manually• Local Resection• Orientation by Known Azimuth• Orientation by Known Backsight• Orientation & Height Transfer to up to 10 target points• Resection Helmert• Resection to up to 10 target points
	Survey includes: <ul style="list-style-type: none">• AutoPoint recording• Remote Heights• Target Offset calculations

3.2 SmartWorx TPS Application Programs, Standard

738 478	COGO includes: <ul style="list-style-type: none">• Arc Calculations• Intersections• Inverse• Line Calculations• Shift, Rotate & Scale (Manual)• Shift, Rotate & Scale (Match Pts)• Traverse
737 844	Alignment Tool Kit
740 269	Determine Coordinate System
752 691	DXF Import
744 617	GPS Survey
738 477	Stakeout

3.3 SmartWorx TPS Application Programs, Optional

748 188	Area Division (requires COGO)
744 866	Athletics
748 186	Cross Section
734 169	DTM Stakeout (requires Stakeout)
760 346	DXF Export
742 442	Hidden Point
763 403	Land XML Export
744 701	Monitoring (requires Sets of Angles)
734 167	Reference Line
734 181	Reference Plane
734 182	RoadRunner
746 388	RoadRunner Rail
742 591	RoadRunner Tunnel
734 168	Sets of Angles
734 170	Traverse
765 559	Traverse Adjustment (requires Traverse)
748 187	Volume Calculation

3.4 Software Options

765 231	GeoCom Imaging licence for TS30/TM30
---------	--------------------------------------

3.5 Optional Licences for SmartStation Setups



Additional TPS licences for GS12 SmartStation setups can be found in the chapter 20.4.



Additional TPS licences for GS09 SmartStation setups can be found in the chapter 19.2.

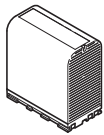
Accessories for Total Station

4 Accessory Sets

6003186	TS30/TM30	Accessory Set Consisting of: GDF121 tribrach, 2 GEB241 batteries, GKL221 charger with two GDI221 charging adapters, MCF256 CompactFlash card 256MB, GEV218 Data transfer cable Lemo 1/USB.
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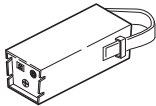
5 Power Supply


5.1 Internal Batteries



754 834	GEB241	Lithium-Ion battery, 14.8V/4.8Ah, rechargeable, for TS30/TM30.
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5.2 External Batteries



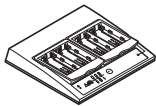
727 367	GEB171	External universal battery, NiMH, 12V/9Ah, rechargeable.
749 279	GEV208	External power supply unit. To connect TS30/TM30 instruments to mains power (220V to 12V).  Requires a GEV219 or GEV220 cable.

5.3 Battery Cables



758 469	GEV219	1.8m power cable, connects external battery GEB171 to TS30/TM30 instrument.
439 038	GEV71	Car battery cable 4m, to connect 12V car battery.
759 257	GEV220	Y-cable, connects TS30/TM30 to PC (9-pin RS232 serial) and external battery, 2m.

5.4 Battery Chargers



733 271	GKL221	Charger PRO. To be used with up to two charging adapters GDI221 or GDI222, charger cable and net adapter included.
733 323	GDI221	Adapter for GKL221 for charging 2 Li-Ion batteries GEB241, GEB221 or GEB211.
734 389	GDC221	Car adapter for the GKL221 charger. Allows the use of the GKL221 with a cigarette lighter; 12V/24V DC/DC converter.

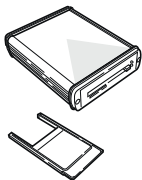
6 Data Storage and Data Transfer

6.1 CompactFlash Card



733 257	MCF256	CompactFlash card 256MB for TPS instruments and CS10/CS15 field controller.
745 995	MCF1000	CompactFlash card 1GB for TPS instruments and CS10/CS15 field controller.

6.2 Card Reader & Adapter



767 895	MCR7	Card reader for SD/CF cards.
733 258	MCFAD1	CompactFlash PC card adapter.

6.3 Data Transfer Cables





758 468	GEV218	Data transfer cable, Lemo to USB connector (incl. USB electronics), 2.0m. Connects TS30/TM30 to PC driver and user manual included on CD.
733 282	GEV162	2.8m data transfer cable. Connects GPS1200+ receiver RX controller port or TS30/TM30 to PC for data transfer, firmware upload etc. Lemo to 9-pin RS232 serial connector.
759 257	GEV220	Y-cable, connects TS30/TM30 to PC (9-pin RS232 serial) and external battery, 2m.
771 057	GEV236	Y-cable, connects TS30/TM30 to TCPS radio and external battery, 2m.
733 283	GEV163	Data transfer cable, connects CS10/CS15 field controller with CSC01Lemo connector to TS30/TM30, 1.8m.

7 Optical Accessories

7.1 Eyepiece



377 802	FOK53	Magnification eyepiece, additional eyepiece for increasing telescope magnification to 42x.  Modification in a workshop necessary.
308 838	FOK53	Magnification eyepiece, additional eyepiece for increasing telescope magnification to 42x.  Modification ex factory. Can only be ordered with a new instrument.
734 514	GFZ3	Diagonal eyepiece for telescope.
376 236	GOK6	Eyepiece for steep sights, with joint allowing variable sighting angle.

7.2 Autocollimation Set



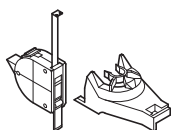
199 899	GOA2	Autocollimation eyepiece.
394 787	GEB62	Plug-in lamp, with cable for autocollimation eyepiece.
394 792	GEB63	Battery box for autocollimation eyepiece and eyepiece lamp.

7.3 Objective



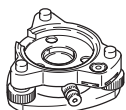
743 504	GVO13	Objective solar filter for TPS instruments.
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8 Instrument Height Meter



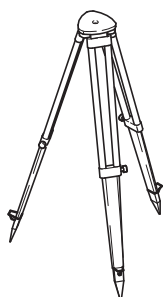
667 718	GHM007	Instrument height meter.
722 045	GHT196	Distance holder for height meter.

9 Tribrachs



667 304	GDF121	Tribrach, without optical plummet, pale green.
667 307	GDF122	Tribrach, with optical plummet, pale green.

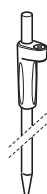
10 Tripods



296 632	GST20	Tripod, telescopic, with accessories (plumb bob, carrying strap and side clamp screws).
394 752	GST20-9	Tripod, telescopic, with accessories, without pouch.
667 301	GST120-9	Tripod, telescopic, selfclosing, with accessories, without pouch.
332 200	GST4	Tripod-star, for setting up tripods on hard and slippery surfaces.

11 Reflector Poles

11.1 Standard Poles

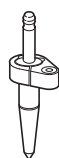


385 500	GLS11	Reflector pole, telescopic, with circular bubble, cm and ft graduation, extends to 2.15m.
754 391	GLS12	Reflector pole, telescopic to 2.00m with circular bubble, cm graduations.
754 389	GLS12F	Reflector pole, telescopic to 2.00m with circular bubble, ft graduations.
752 292	GLS30	Telescopic carbon GNSS pole with 5/8" screw. Snap locks at 1.80m and 2.00m. Includes circular bubble.
766 359	GLS31	Reflector carbon-fibre pole with circular bubble and twist lock. Snap-locks at 2.00m for GPS (GNSS) antennas with GAD31 adapter or GRZ122 reflector (SmartPole setup).
667 309	GLS111	Reflector pole, with bull's-eye bubble, cm/ft graduation, extends to 2.60m, with red/white 0.20m graduations.
667 310	GLS112	Reflector pole, with bull's-eye bubble, cm/ft graduation, extends to 3.65m, with red/white 0.20m graduations.
555 720	GSR2	Dual strut support for GLS11/GLS11K plumbing pole.
667 319	GSR111	Dual-strut support for all GLS.
403 428	GZW12	Extension 1m long, for reflector pole GLS11 and carriers.

11.2 Hidden Point Pole

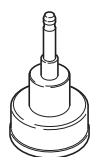
742 329	GMP112	Hidden Point pole extension for GMP111 (mini prism pole set). Includes mini prism with holder and 30cm adapter pole.
744 495	GMP112-0	Hidden Point pole extension for GMP111-0. Includes mini prism and 30cm adapter pole.

11.3 Mini Pole



403 427	GLS14	Mini reflector pole, (prism/target 20cm over point), with circular bubble.
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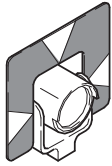
12 Reflector Carriers



667 313	GRT144	Carrier with stub, pale green.
667 316	SNLL121	Precision carrier, with plate level and zenith-nadir laser plummet.
428 340	GZR3	Precision carrier, with plate level and optical plummet.
725 566	GZR103	Carrier, with plate level and optical plummet, for reflectors and GPS antenna, pale green.

13 Reflectors

13.1 Circular Reflectors



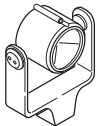
362 830	GPR1	Circular prism, in black housing.
641 617	GPR121	Circular prism, with metal holder and target plate.
362 820	GPH1	Single-prism holder.
400 080	GPH3	Three-prism holder.
362 823	GZT4	Target plate, for GPH1.

13.2 360° Reflectors



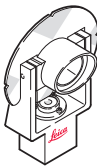
639 985	GRZ4	360° reflector.
644 327	GRZ101	360° mini prism with 1/4" thread fitting. Not supported by PowerSearch.
754 384	GRZ122	360° reflector with 5/8" thread adapter for mounting of GPS antenna.
742 006	GAD103	Adapter for attaching GRZ101 to all poles with Leica Geosystems stub.

13.3 Precision Reflectors



555 631	GPH1P	Single-prism precision reflector.
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13.4 Mini Reflectors



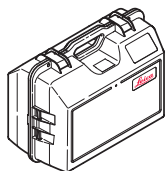
641 662	GMP101	Mini prism, incl. bubble, target plate and spike, in bag, also suitable for GLS11 and GRT44 (same height as GPH1, additive constant +17.5mm).
641 762	GMP104	Mini prism, with L-bar, for fixed installations.
641 615	GMP111	Mini prism, incl. bubble, with GLS115 pole set.
642 534	GMP111-0	Mini prism 0-constant, incl. bubble, with GLS115 pole set.
743 503	GAD105	Adapter for GMP111 to all poles with Leica Geosystems stub.

13.5 Reflector Tapes



763 532	GZM29	Reflective tape, 20x20mm for short range, pack of 20 pieces.
763 533	GZM30	Reflective tape, 40x40mm for medium range, pack of 20 pieces.
763 534	GZM31	Reflective tape, 60x60mm for long range, pack of 20 pieces.

14 Additional Containers



754 598	GVP640	Hard container for GS09 SmartAntenna and corresponding GS09 SmartStation accessories.
767 828	GVP642	Viva hard container for GS15 SmartAntenna, CS10/CS15 field controller, and corresponding SmartPole and SmartStation accessories.
782 384	GVP656	Viva hard container for GS12 SmartAntenna, CS10/CS15 field controller, and corresponding SmartPole and SmartStation accessories.
744 501	GDZ66	Backstraps (2) for GVP640 and GVP642 hard container.
667 451	GVP609	Container for 2 circular prisms GPR111/121, 2 carriers/laser plummet and 2 tribrachs.
727 589	GVP102	Soft bag with shoulder strap, for prism station, consist of tribrach, prism carrier or laser plummet and prism.

Remote Control

15 Remote Control

15.1 Remote Control Sets

Advanced Remote Control Sets

6003611	Advanced CS10 Set for TPS1200+ and TS30/TM30 instruments, consisting of CS10 radio field controller with integrated TPS radio modem, CBC01 Lemo connector modul and CS SmartWorx Viva licence key (767 909), GHT62 pole holder with GHT63 pole clamp, RH15 RadioHandle, 2 GEB212 battery and container.
6003612	Advanced CS15 Set for TPS1200+ and TS30/TM30 instruments, consisting of CS15 radio field controller with integrated TPS radio modem, CBC01 Lemo connector modul and CS SmartWorx Viva licence key (767 909), GHT62 pole holder with GHT63 pole clamp, RH15 RadioHandle, 2 GEB212 battery and container.

Professional Remote Control Set

6003841	Professional CS15 Set for TPS1200+ and TS30/TM30 instruments, consisting of CS15 UMTS radio field controller with intrgrated TPS radio modem, CBC01 lemo connector modul and CS SmartWorx Viva licence key (767 909), GHT62 pole holder with GHT63 pole clamp, RH15 RadioHandle, 2 GEB212 batteries and container.
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15.2 CS10/CS15 Radio Field Controller



767 866	CS10 Radio Field Controller	CS10 Radio Field Controller. Ruggedized WinCE field controller with full VGA colour touch screen, 1GB NAND flash memory, 512MB SDRAM, CF/SD card slot and 2MP camera. Includes Bluetooth, internal WLAN module, internal TPS radio module, numeric keypad, stylus. Available with either Lemo connector (CBC01) or DSUB connector module (CBC02).
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767 871	CS15 Radio Field Controller	CS15 Radio Field Controller. Ruggedized WinCE field controller with full VGA colour touch screen, 1GB NAND flash memory, 512MB SDRAM, CF/SD card slot and 2MP camera. Includes Bluetooth, internal WLAN module, internal TPS radio module, QWERTY keypad, stylus. Available with either Lemo connector (CBC01) or DSUB connector module (CBC02).
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781 600	CS15 UMTS Radio Field Controller	CS15 UMTS Radio Field Controller. Ruggedized WinCE UMTS field controller with full VGA colour touch screen, 1GB NAND flash memory, 512 MB SDRAM, CF/SD card slot and 2MP camera. Includes UMTS module, Bluetooth, internal WLAN module, internal TPS radio module, QUERTY keypad and stylus. Available with either Lemo connector (CBC01) or DSUB connector module (CBC02).
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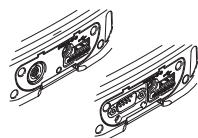
Extra pen



781 521	GDZ69	Extra pen with screw driver for CS10 and CS15 field controller.
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Anti-glare display foils

767 907	SPF01	Anti-glare display foils for CS10 and CS15 field controller.
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16 Connector Modules for CS10/CS15



767 874	CBC01	Lemo connector module with power jack, Lemo (USB and Serial) and USB A host for CS10 and CS15 field controller.  Can only be ordered with CS10/CS15 field controller.
767 875	CBC02	DSUB connector module with power jack, DSUB 9-pin, USB A host and USB mini AB for CS10 and CS15 field controller.  Can only be ordered with CS10/CS15 field controller.

17 SmartWorx Viva Software and Application Programs


17.1 SmartWorx Viva Software for CS10/CS15

767 908	SmartWorx Viva software and DVD.
767 910	CS SmartWorx Viva LT licence key.  Requires 767 908 SmartWorx Viva software.
767 909	CS SmartWorx Viva licence key.  Requires 767 908 SmartWorx Viva software.
767 911	CS SmartWorx Viva LT to CS SmartWorx Viva upgrade option.





17.2 Applications Included with SmartWorx Viva

	CS Smart- Worx Viva	CS Smart- Worx Viva LT
Survey includes: <ul style="list-style-type: none"> • Survey • Code points • Auto points recording • Remote Heights • Target Offset calculations 	● ● ● ● ●	● ● ○ - ●
Setup includes: <ul style="list-style-type: none"> • Get station coordinates from GPS, from Job or enter manually • Orientation by known Azimuth • Orientation by known Backsight • Orientation & Height transfer to up to 10 target points • Resection up to 10 target points • Resection Helmert • Orientation to Line 	● ● ● ● ● ● ●	○ ● ● ● ● ● ●
Stakeout includes: <ul style="list-style-type: none"> • Navigate to point using various methods: North, point, to and from total station • Quality control - checking of coordinate differences before storing • Automatic selection of next closest point to stake • Graphical selection of point from map • Edit heights and offset heights of points • Acoustic "reversing beep" when getting closer to point 	● ● ● ● ● ●	○ - - ● - -
COGO includes: <ul style="list-style-type: none"> • Inverse • Traverse • Intersections • Line calculations • Arc calculations • Angle and curve calculator • Shift, Rotate & Scale (manual) • Shift, Rotate & Scale (match Points) 	● ● ● ● ● ● ● ●	● ● ● ● ● - ● ●
Determine coordinate system: <ul style="list-style-type: none"> • 1 step, 2 step, 3D Transformation • All common projections 	● ●	● ●
Alignment Tool Kit: <ul style="list-style-type: none"> • Horizontal alignments • Vertical alignments • Cross sections • Chainage equations 	● ● ● ●	● ● ● ●
Data import: ASCII, DXF	●	●
Data export: Custom ASCII, DXF, LandXML, FBK, RW5, RAW	●	●
<p>● All options and functionality available ○ Limited options and functionality - Not available</p>		

17.3 Additional SmartWorx Viva Software Packages

		SmartWorx Viva	SmartWorx Viva LT
767 913	Worksite+ includes: <ul style="list-style-type: none"> CS DTM Stakeout application (767 919) CS Reference Line application (767 915) CS Surface & Volumes application (767 920) 	● ● ●	● ○ ●
767 912	Survey+ includes: <ul style="list-style-type: none"> CS Reference Plane and Grid Scanning (767 916) CS Survey Cross Section (767 918) CS Traverse (767 927) CS Sets of Angles (767 929) CS Hidden Point (767 926) <p> Requires Art. No. 767 909 SmartWorx Viva.</p>	● ● ● ● ●	- - - - -
<p>● All options and functionality available</p> <p>○ Limited options and functionality</p> <p>- Not available</p>			

17.4 Optional Applications for SmartWorx Viva

		SmartWorx Viva	SmartWorx Viva LT
767 917	CS COGO Area Division  Requires COGO application.	●	●
767 919	CS DTM Stakeout  Requires Stakeout application.	●	●
767 931	CS Monitoring  Requires Sets of Angles application.	●	-
767 915	CS Reference Line  Requires Stakeout application.	●	○
767 916	CS Reference Plane and Grid Scanning	●	-
767 921	CS RoadRunner	●	○
767 923	CS RoadRunner Rail	●	-
767 922	CS RoadRunner Tunnel	●	-
777 645	CS RoadRunner Importer	●	●
767 929	CS Sets of Angles	●	-
767 918	CS Cross Section	●	-
767 920	CS Surface and Volumes	●	●
767 926	CS TPS Hidden Point	●	-
767 927	CS Traverse	●	-
<p>● All options and functionality available</p> <p>○ Limited options and functionality</p> <p>- Not available</p>			

17.5 Optional Licences for CS10/CS15 Controller

 Further CS licences for GS12 SmartPole setups can be found in the chapter 20.3.

779 474	Topcon total station control licence.
782 287	Nikon totalstation control licence.
782 286	SOKKIA totalstation control licence.

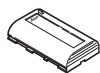
17.6 SmartWorx Viva PC Software

773 894	SmartWorx Viva PC Software. Licence Key to run the SmartWorx Viva software on a PC.
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Accessories for Remote Control

18 Accessories for Remote Control

18.1 Internal Batteries



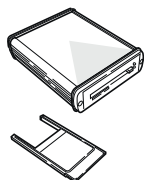
733 269	GEB211	Lithium-Ion battery, 7.4V/2.2Ah, rechargeable. To be used with CS10/CS15 field controller and GS09 or GS15 receivers.
772 806	GEB212	Lithium-Ion battery, 7.4V/2.6Ah, rechargeable. To be used with CS10/CS15 field controller and GS09 or GS15 receivers.

18.2 Memory Devices



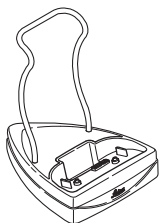
767 856	MSD1000	SD memory card 1GB for CS10 and CS15 field controller.
733 257	MCF256	CompactFlash card 256MB for TPS instruments and CS10/CS15 field controller.
745 995	MCF1000	CompactFlash card 1GB for TPS instruments and CS10/CS15 field controller.
765 199	MS1	USB memory stick, 1GB, industrial grade.

18.3 Card Reader & Adapter



767 895	MCR7	Card reader for SD/CF cards.
733 258	MCFAD1	CompactFlash PC card adapter.

18.4 Docking Station

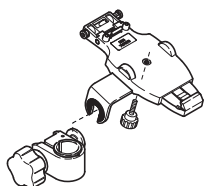


767 906	CCS01	Docking station for CS10 and CS15 field controller for charging and data transfer to PC, includes: GEV223 (USB A to USB mini data transfer cable).
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18.5 Additional Power Accessories

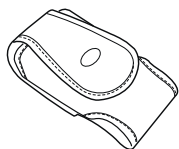
767 900	GEV235	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in the EU.
773 753	GEV235-1	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in the US.
773 754	GEV235-2	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in Japan.
773 755	GEV235-3	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in the UK.
773 756	GEV235-4	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in Australia.
734 389	GDC221	Car adapter for the GKL221 charger. Allows the use of the GKL221 with a cigarette lighter; 12V/24V DC/DC converter. Can also be used to power CS10/CS15 field controller directly from a cigarette lighter.

18.6 Pole Accessories for CS10/CS15 Field Controller



767 879	GHT62	Pole holder base plate for CS10 and CS15 field controller.
767 880	GHT63	Clamp arrangement for attaching the GHT62 to all poles.

18.7 Softbags and Hand Strap for CS10/CS15 Field Controller



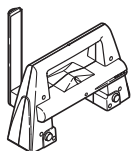
Soft bags

767 904	GVP643	Soft bag for CS10 field controller for transportation and protection against dirt. Including belt loop.
767 905	GVP644	Soft bag for CS15 field controller for transportation and protection against dirt. Including belt loop.

Hand strap

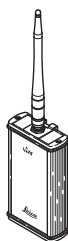
767 877	GHT61	Hand strap for CS10 and CS15 field controller with utility hook for attaching to belt or tripod.
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18.8 RH15 RadioHandle



772 300	RH15	Radio Handle with integrated radio modem and radio antenna. Used as radio modem for TPS1200+ and TS30/TM30 instruments together with CS10 & CS15 field controller (frequency range 2402 - 2452MHz).
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18.9 TCPS28 Modems



772 301	TCPS28B	Radio modem (base) with antenna, user manual. Used as radio modem for TPS1200+ and TS30/TM30 instruments to communicate with CS10 & CS15 field controller (frequency range 2402 - 2452MHz).
772 302	TCPS28R	Radio modem (remote) with antenna, user manual. Used as external radio to establish radio connection with TCPS28B (frequency range 2402 - 2452MHz).

18.10 TCPS28 Accessories



734 163	GHT43	Adapter for mounting TCPS28 radio module on GST20/GST120 tripod.
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18.11 Cables for CS10/CS15 Field Controller and TCPS28 Radio Modems



Cable adapters

734 389	GDC221	Car lighter to power jack for CS10/CS15 field controller.
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Data transfer cables

764 700	GEV223	Data transfer cable for connecting CS10/CS15 field controller to PC (USB A to USB mini connector).
767 899	GEV234	Cable to connect CS10/CS15 field controller to GS10/GS15 SmartAntenna for data transfer. USB A to Lemo connector (for GS15 SmartStation setup).
772 807	GEV237	Cable to connect CS10/CS15 field controller to GS15 SmartAntenna for data transfer. Lemo to Lemo connector (for GS15 SmartStation setup).
733 283	GEV163	Data transfer cable, connects CS10/CS15 field controller with CSC01 Lemo connector to TS30/TM30, 1.8m.
771 057	GEV236	Y-cable, connects TS30/TM30 to TCPS radio and external battery, 2m.

Power cables

758 469	GEV219	Power cable, connects CS10/CS15 (with Lemo CBC01 connector module) to external battery.
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SmartStation

19 SmartStation Setup using GS09 Antenna

19.1 GS09 Antenna

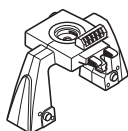


769 646	GS09	GPS/GLONASS dual frequency antenna. Can be used with TPS1200+ and TS30/TM30 instruments for SmartStation setup.
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19.2 Additional TPS Software Options for GS09 Receiver

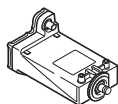
752 656	GPS raw data logging license (for SmartStation with GS09 antenna)
752 873	TPS GLONASS option (for SmartStation with GS09 antenna)

19.3 SmartAntenna Adapter



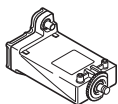
741 965	GAD104	SmartAntenna adapter. Required to attach GS09 antenna and/or radio modem in GFU14 housing onto TPS1200+/TS30/TM30.
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19.4 Sateline Radio Modems



Satellite modems		
733 275	GFU14-0	Satellite 3AS radio modem (433.525MHz, 25.0kHz channel spacing, 0.5W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
733 276	GFU14-1	Satellite 3AS radio modem (406.425MHz, 25.0kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 272	GFU14-2	Satellite 3AS radio modem (445.000MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 273	GFU14-3	Satellite 3AS radio modem (443.000MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 274	GFU14-4	Satellite 3AS radio modem (440.550MHz, 25.0kHz channel spacing, 0.5W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 275	GFU14-5	Satellite 3AS radio modem (458.150MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 276	GFU14-6	Satellite 3AS radio modem (439.8625MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
753 928	GFU14-7	Satellite 3AS radio modem (464.5000MHz, 25.0kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
756 623	GFU14-8	Satellite 3AS radio modem (458.6000MHz, 25.0kHz channel spacing, 0.5W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
767 859	GFU27	Satellite M3 TR1 403-470Mhz RX/TX radio in GFU housing. Transceiver UHF radio module. User manual and CE Declaration of Conformity included.
Cable for Satellite modems		
733 297	GEV171	1.8m cable to program the Sateline 3AS radio modem inside the GFU14 housing.

19.5 Pacific Crest Radio Modems

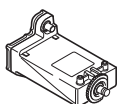


Pacific Crest radio modems must be ordered directly from your local Pacific Crest office or representative.

PDL receive only modems built into the Leica GFU radio housing with 12.5 or 25kHz channel spacing within the following frequency bands are available:

- 410 - 430MHz
- 430 - 450MHz
- 450 - 470MHz
- 223 - 235MHz

19.6 Mobile Phones



750 242	GFU24	Housing with Siemens MC75 GSM/GPRS module (Quad-Band GSM 850/900/1800/1900MHz), fits on GAD104 SmartAntenna adapter.
750 243	GFU25	CDMA cellular phone for Canada, Multitech MTMMC-C-N12 for Bell mobility network, integrated into housing, fits on GAD104 SmartAntenna adapter.
744 754	GFU19	US CDMA cellular phone Multitech MTMMC-C; integrated into housing, fits on GAD104 SmartAntenna adapter.
767 860	GFU28	5-Band (850/900/1800/1900/2100Mhz) Telit 3.5G GSM/GPRS/UMTS module in GFU housing. Provides fully flexibility due to 5-band technology and therefore global compatible to all GSM, GPRS, EDGE and UMTS network providers.
783 170	GFU28-1	5-Band (850/900/1800/1900/2100 Mhz) Telit 3G GSM/GPRS/UMTS module for US and Canada only. Provides fully flexibility due to 5-band technology and therefore compatible to GSM, GPRS, EDGE and UMTS network providers in US and CAN.

19.7 Antennas for Radio Modems and Mobile Phones



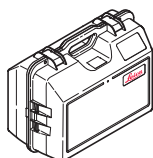
Antennas for radio modems

743 281	GAT1201	Antenna for radio modem for use with SmartStation (400-435MHz).
743 282	GAT1202	Antenna for radio modem for use with SmartStation (435-470MHz).

Antennas for mobile phones

743 283	GAT1203	Antenna for 900/1800MHz mobile network for use with SmartStation.
743 284	GAT1204	Antenna for US mobile network (800/1900MHz) for use with SmartStation.

19.8 Container for GS09 Antenna & SmartStation Accessories



754 598	GVP640	Hard container for GS09 SmartAntenna and corresponding GS09 SmartStation accessories.
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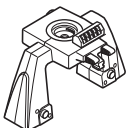
20 SmartStation & Smartpole Setup using a GS12 GNSS Receiver

20.1 GS12 GNSS Receiver



782 288	GS12	GS12 GNSS receiver, Geodetic 120 channels GNSS receiver, includes: GPS L1+L2, 1 Hz position rate, easily upgradeable with TS/GS12 or CS/GS12 options (e.g. Glonass, Gallileo, GPS L5, Network Licence, Raw data logging).
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20.2 SmartAntenna Adapter



741 965	GAD104	GS12 SmartAntenna Adapter. Required to attach a GS12 GNSS Antenna onto a TPS1200+/TS30/TM30 Instrument.
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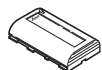
20.3 Additional CS Options for GS12 GNSS SmartPole Setup

782 278	GSW949	CS/GS12 GLONASS License. License key for the CS10/CS15 field controller which enables use of GLONASS with a GS12 receiver.
782 279	GSW950	CS/GS12 GPS L5 License. License key for the CS10/CS15 field controller which enables use of GPS L5 with a GS12 receiver.
782 280	GSW951	CS/GS12 GPS Galileo License. License key for the CS10/CS15 field controller which enables use of Galileo with a GS12 receiver.
782 281	GSW952	CS/GS12 5Hz License. License key for the CS10/CS15 field controllers which enables to compute 5Hz positions with a GS12 receiver.
782 282	GSW953	CS/GS12 Raw Data Logging License. License key for the CS10/CS15 field controllers which enables logging of Leica MDB raw data with a GS12 receiver.
782 283	GSW954	CS/GS12 RINEX Logging License. License key for the CS10/CS15 field controllers which enables logging of RINEX raw data with a GS12 receiver.
782 284	GSW955	CS/GS12 Network RTK Network License. License key for the CS10/CS15 field controllers which enables the GS12 receiver to work within an RTK network. Includes unlimited RTK baseline.
782 285	GSW956	CS/GS12 Leica Lite RTK License. License key for the CS10/CS15 field controllers which enables the GS12 antenna to receive Leica Lite RTK messages.

20.4 Additional TPS Options for GS12 SmartStation Setup

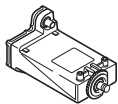
752 873	GSW583	GS12 GLONASS License for TPS1200+, TS30/TM30 instruments. License key for the TPS1200+, TS30/TM30 total stations which enables use of GLONASS with a GS12 receiver.
768 424	GSW706	GS12 GPS L5 License for TPS1200+, TS30/TM30 instruments. License key for the TPS1200+, TS30/TM30 total stations which enables use of GPS L5 with a GS12 receiver.
766 717	GSW679	GS12 GPS Galileo License for TPS1200+, TS30/TM30 instruments. License key for the TPS1200+, TS30/TM30 total stations which enables use of Galileo with a GS12 receiver.
752 656	GSW532-1	GS12 Raw Data Logging License for TPS1200+, TS30/TM30 instruments. License key for the TPS1200+, TS30/TM30 total stations which enables logging of Leica MDB raw data with a GS12 receiver.
6002648		GS12 Pre-Signal Bundle for TPS1200+, TS30/TM30 instruments (SmartStation). Consists of GLONASS option, GPS L5 option and Galileo option.

20.5 Power Supply



733 269	GEB211	Lithium-Ion battery, 7.4V/2.2Ah, rechargeable. To be used with CS10/CS15 field controller and GS09, GS12 or GS15 receivers.
772 806	GEB212	Lithium-Ion battery, 7.4V/2.6Ah, rechargeable. To be used with CS10/CS15 field controller and GS09, GS12 or GS15 receivers.

20.6 Satellite Radio Modems



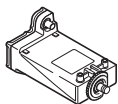
Satellite modems

733 275	GFU14-0	Satellite 3AS radio modem (433.525MHz, 25.0kHz channel spacing, 0.5W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
733 276	GFU14-1	Satellite 3AS radio modem (406.425MHz, 25.0kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 272	GFU14-2	Satellite 3AS radio modem (445.000MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 273	GFU14-3	Satellite 3AS radio modem (443.000MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 274	GFU14-4	Satellite 3AS radio modem (440.550MHz, 25.0kHz channel spacing, 0.5W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 275	GFU14-5	Satellite 3AS radio modem (458.150MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
738 276	GFU14-6	Satellite 3AS radio modem (439.8625MHz, 12.5kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
753 928	GFU14-7	Satellite 3AS radio modem (464.5000MHz, 25.0kHz channel spacing, 1.0W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
756 623	GFU14-8	Satellite 3AS radio modem (458.6000MHz, 25.0kHz channel spacing, 0.5W) already intergrated into housing, fits on GAD104 SmartAntenna adapter. User manual and CE Declaration of Conformity included.
767 859	GFU27	Satellite M3 TR1 403-470Mhz RX/TX radio in GFU housing. Transceiver UHF radio module. User manual and CE Declaration of Conformity included.

Cable for Satellite modems

733 297	GEV171	1.8m cable to program the Sateline 3AS radio modem inside the GFU14 housing.
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20.7 Pacific Crest Radio Modems

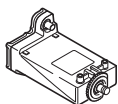


Pacific Crest radio modems must be ordered directly from your local Pacific Crest office or representative.

PDL receive only modems built into the Leica GFU radio housing with 12.5 or 25kHz channel spacing within the following frequency bands are available:

- 410 - 430MHz
- 430 - 450MHz
- 450 - 470MHz
- 223 - 235MHz

20.8 Mobile Phones



750 242	GFU24	Housing with Siemens MC75 GSM/GPRS module (Quad-Band GSM 850/900/1800/1900MHz), fits on GAD104 SmartAntenna adapter.
750 243	GFU25	CDMA cellular phone for Canada, Multitech MTMMC-C-N12 for Bell mobility network, integrated into housing, fits on GAD104 SmartAntenna adapter.
744 754	GFU19	US CDMA cellular phone Multitech MTMMC-C; intergrated into housing, fits on GAD104 SmartAntenna adapter.
767 860	GFU28	5-Band (850/900/1800/1900/2100Mhz) Telit 3.5G GSM/GPRS/UMTS module in GFU housing. Provides fully flexibilty due to 5-band technology and therefore global compatible to all GSM, GPRS, EDGE and UMTS network providers.
783 170	GFU28-1	5-Band (850/900/1800/1900/2100 Mhz) Telit 3G GSM/GPRS/UMTS module for US and Canada only. Provides fully flexibilty due to 5-band technology and therefore compatible to GSM,GPRS,EDGE and UMTS network providers in US and CAN.

20.9 Antennas for Radio Modems and Mobile Phones



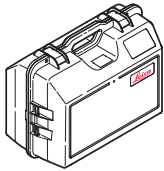
Antennas for radio modems

743 281	GAT1201	Antenna for radio modem for use with SmartStation (400-435MHz).
743 282	GAT1202	Antenna for radio modem for use with SmartStation (435-470MHz).

Antennas for mobile phones

743 283	GAT1203	Antenna for 900/1800MHz mobile network for use with SmartStation.
743 284	GAT1204	Antenna for US mobile network (800/1900MHz) for use with SmartStation.

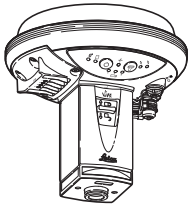
20.10 Container for GS12 Receiver



782 384	GVP656	Viva hard container for GS12 SmartAntenna, CS10/CS15 field controller, and corresponding SmartPole and SmartStation accessories.
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21 SmartStation Setup using GS15 GNSS Receiver

21.1 GS15 GNSS Receiver

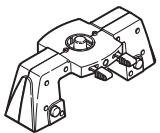


767 789	GS15	Leica GS15 Basic SmartAntenna
771 502	GS15	Leica GS15 Limited SmartAntenna
771 503	GS15	Leica GS15 Performance SmartAntenna
771 504	GS15	Leica GS15 Professional SmartAntenna

	Leica GS15 Basic	Leica GS15 Limited	Leica GS15 Performance	Leica GS15 Professional
Supported GNSS Systems				
GPS L2	●	●	●	●
GPS L5	○	○	○	●
GLONASS	○	○	○	●
Galileo	○	○	○	●
RTK performance				
DGPS/RTCM	○	●	●	●
RTK up to 5km	○	●	●	●
RTK unlimited	○	○	●	●
Network RTK	○	○	●	●
Leica Lite RTK	○	○	○	●
Position update & data recording				
5 Hz positioning	○	●	●	●
20 Hz positioning	○	○	●	●
Raw data logging	○	●	●	●
RINEX logging	○	○	○	●
NMEA out	○	○	○	●
Additional features				
RTK Reference Station functionality	○	○	●	●

● Standard
 ○ Optional

21.2 SmartAntenna Adapter



767 802	GAD110	SmartAntenna adapter to mount GS15 SmartAntenna.
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21.3 Additional GS15 Receiver Options

GNSS Software options

767 804	LOP1	GPS L5 option, enables GPS L5 tracking on a GS10 or GS15 receiver.
767 805	LOP2	GLONASS option, enables GLONASS tracking on a GS10 or GS15 receiver.
767 806	LOP3	Galileo option, enables Galileo tracking on GS10 or GS15 receiver.

Position update and data recording options

767 807	LOP4	5Hz option, enables to compute positions with an update rate up to 5Hz.
767 808	LOP5	20Hz option, enables to compute positions with an update rate up to 20Hz.
767 809	LOP6	Upgrade option from 5Hz to 20Hz. (LOP4 to LOP5)
767 810	LOP7	Raw data option, allows logging of GNSS raw data on GS10 or GS15 receiver or on a CS10/CS15 field controller.
767 811	LOP8	RINEX option, allows logging of RINEX data on GS10 or GS15 receiver.

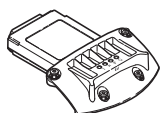
RTK performance options

767 812	LOP9	5km RTK option, enables RTK positions to be computed up to a distance of 5km from a single base station.
767 813	LOP10	Unlimited RTK option, enables RTK positions to be computed from a single base station with no limit of distance.
767 814	LOP11	Upgrade from 5km RTK to unlimited RTK. (LOP9 to LOP10)
767 815	LOP12	Unlimited RTK and Network RTK, enables RTK position to be computed from a single base station and within a RTK network.
767 817	LOP14	Upgrade option for GS10 or GS15 receivers from RTK unlimited only to RTK unlimited including RTK Network. (LOP10 to LOP12)
771 971	LOP20	Leica Lite option, to receive System 900 RTK data on the GS10, GS15 receivers.

Other options

767 816	LOP13	RTK Reference station option, allows a GS10 or GS15 receiver to transmit RTK data.
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21.4 RTK Modems



Satellite radio modules

767 819	SLR1	Satellite 3AS 403-470 MHz TXO radio. RTK transmitting only UHF radio module to be easily plugged into the GS15 GNSS receiver.
767 820	SLR2	Satellite 3AS 403-470 MHz RXO radio. RTK receive only UHF radio module to be easily plugged into the GS15 GNSS receiver.
781 646	SLR5	Satellite M3 TR1 403-470MHz RX/TX radio. RTK receive and transmit UHF radio module to be easily plugged into the GS15 GNSS receiver.

Pacific Crest radio modules

767 821	SLR3-1	Pacific Crest ADL RX/TX radio 390-430Mhz. RTK receive and transmit UHF radio module to be easily plugged into the GS15 GNSS receiver.
767 822	SLR3-2	Pacific Crest ADL RX/TX radio 430-470Mhz. RTK receive and transmit UHF radio module to be easily plugged into the GS15 GNSS receiver.

6002544 Configuration tool kit for programming Satellite and Pacific Crest SLR RTK radio modules; includes programming cable GEV231 and configuration software CD ROM.



SLR radios will be delivered pre-configured according to country-specific radio regulations. In countries where radios need to be configured locally, the configuration tool kit is to be used.



External high power radios such as Satellite Epic Pro (10, 35W), Pacific Crest (2, 35W) or GFU radios can be used for RTK communication instead of the slot-in RTK modems.

Mobile phone modules

767 823	SLG1	5-Band (850/900/1800/1900/2100MHz) Telit GSM/GPRS/UMTS module. Provides full flexibility due to 5-band technology and is globally compatible to all GSM, GPRS, EDGE and UMTS network providers. Can be easily plugged into the GS15 GNSS receiver.
774 689	SLG2	4-Band (850/900/1800/1900MHz) Siemens MC75i GSM/GPRS module. Universal 4-band technology supports GSM, GPRS, and EDGE network providers. Can be easily plugged into the GS15 GNSS receiver.
767 824	SLC1	Dual band Telit CDMA 1xRTT module for US. Supports Sprint (US) network provider and can be easily plugged into the GS15 GNSS receiver.

767 825	SLC2	Dual band Telit CDMA 1xRTT module for US. Supports Verizon (US) network provider and can be easily plugged into the GS15 GNSS receiver.
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21.5 External RTK Antennas



The GS15 receiver is equipped with internal GSM/GPRS/UMTS antenna and internal UHF antenna as standard. In areas of poor GSM/GPRS/UMTS or UHF reception, the use of an external RTK antenna may improve reception.



RTK antenna arm

767 790	GAD108	Arm to mount external UHF/GSM antenna to GS15 SmartAntenna, useful in areas of poor radio or GSM network reception.
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Gainflex radio antennas

639 964	GAT1	Gainflex radio antenna (frequency range 400-435MHz).
667 243	GAT2	Gainflex radio antenna (frequency range 435-470MHz).

Antennas for mobiles phones

782 500	GAT18	Multiband GSM/UMTS Antenna for 850/1900MHz, for 900/1800MHz and for 2100MHz mobile networks.
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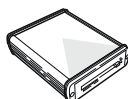


21.6 Memory Devices



767 856	MSD1000	SD memory card 1GB for CS10 and CS15 field controller.
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21.7 Card Reader



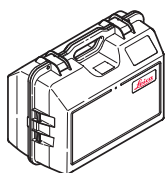
767 895	MCR7	Card reader for SD/CF cards.
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21.8 Power Supply



733 269	GEB211	Lithium-Ion battery, 7.4V/2.2Ah, rechargeable. To be used with CS10/CS15 field controller and GS09 or GS15 receivers.
772 806	GEB212	Lithium-Ion battery, 7.4V/2.6Ah, rechargeable. To be used with CS10/CS15 field controller and GS09 or GS15 receivers.

22 Additional Containers



767 828	GVP642	Viva hard container for GS15 SmartAntenna, CS10/CS15 field controller, and corresponding SmartPole and SmartStation accessories.
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Care Packages

23 Customer Care Packages

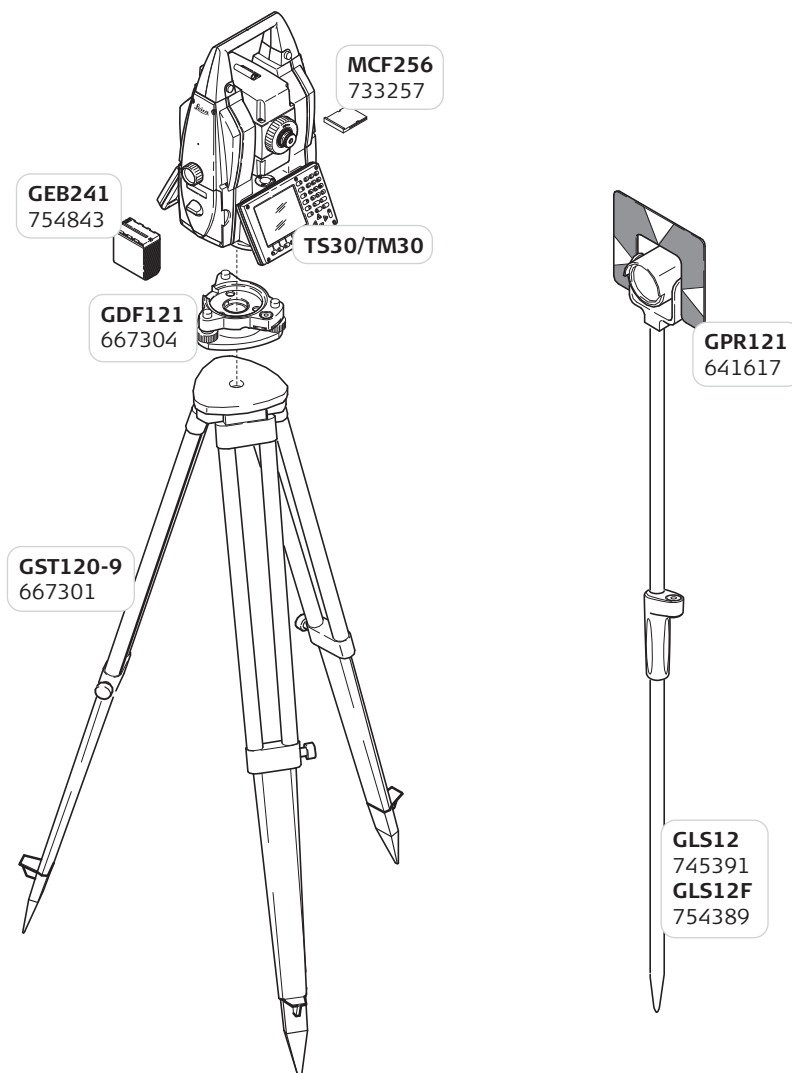


A wide selection of comprehensive Customer Care Packages (CCPs) is available bundling Hardware Maintenance, Software Maintenance, Customer Support and Extended Warranty.

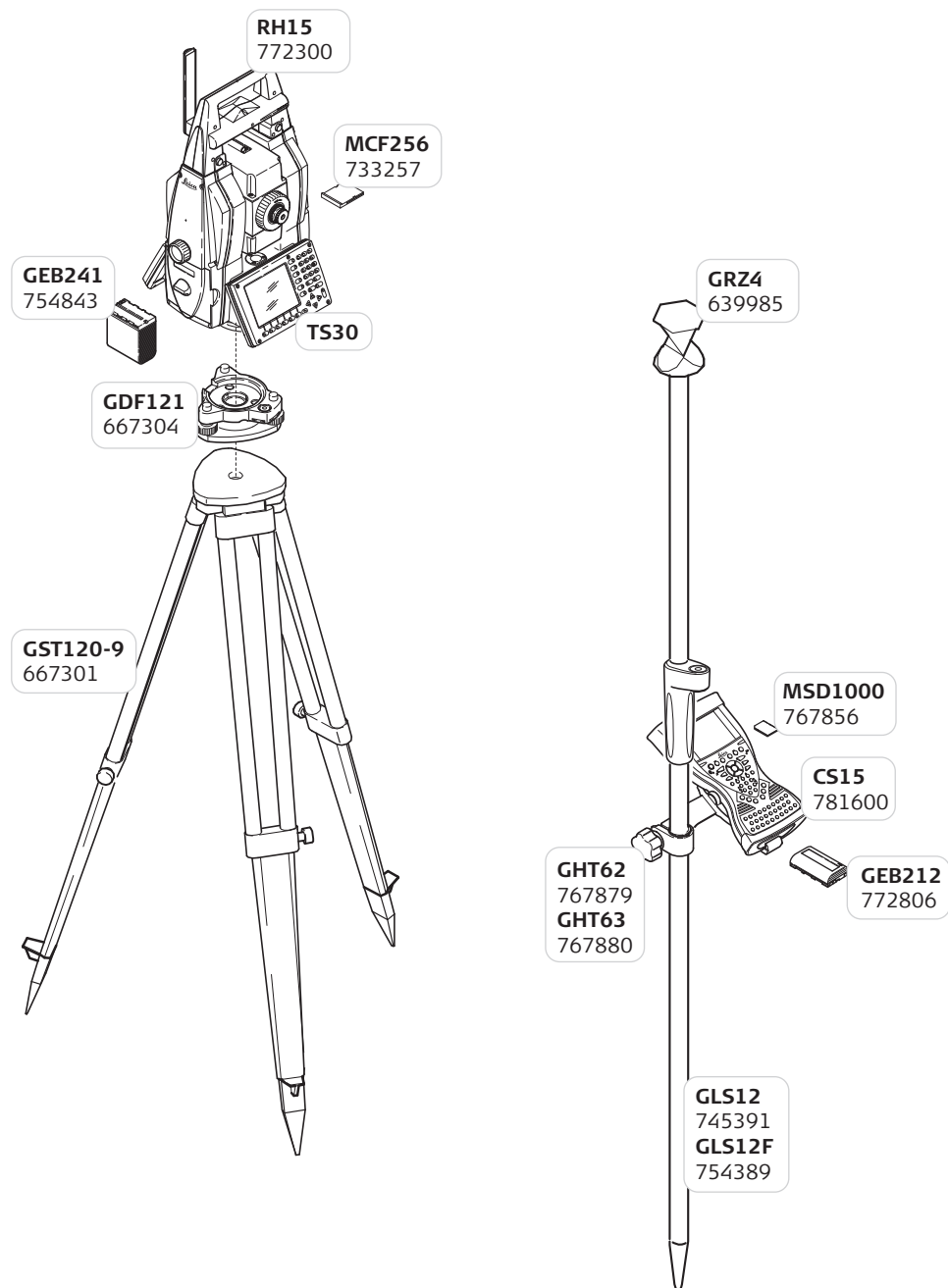
For more information about the CCP offering in your country please contact your local Leica Geosystems organization or distribution partner.


Suggested Equipment Setups

24 Conventional Surveying



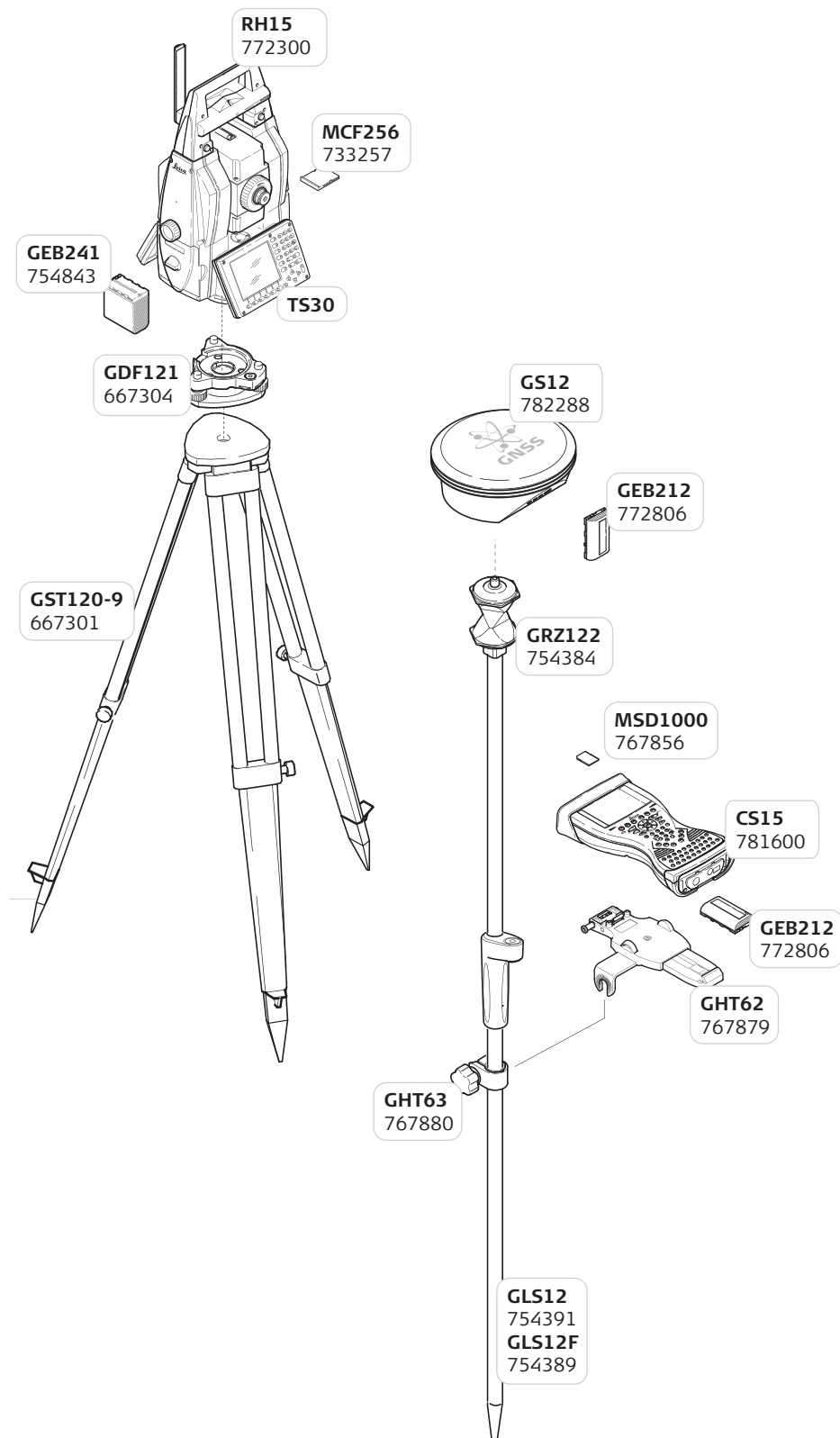
25 Robotic Surveying



 Using SmartWorx Viva functionality on the CS15 radio field controller.

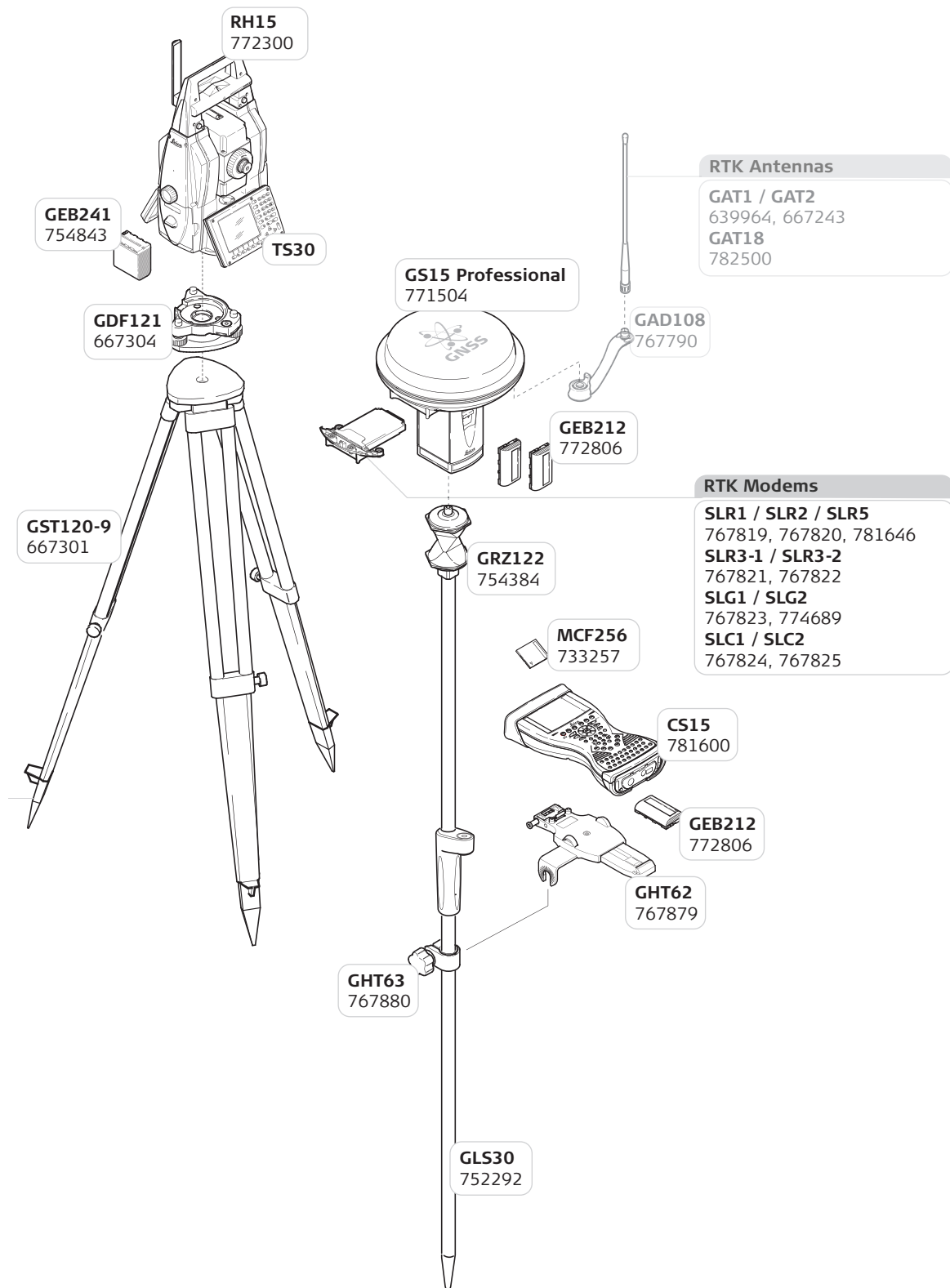
26 SmartPole Surveying

26.1 SmartPole using the GS12 GNSS Receiver



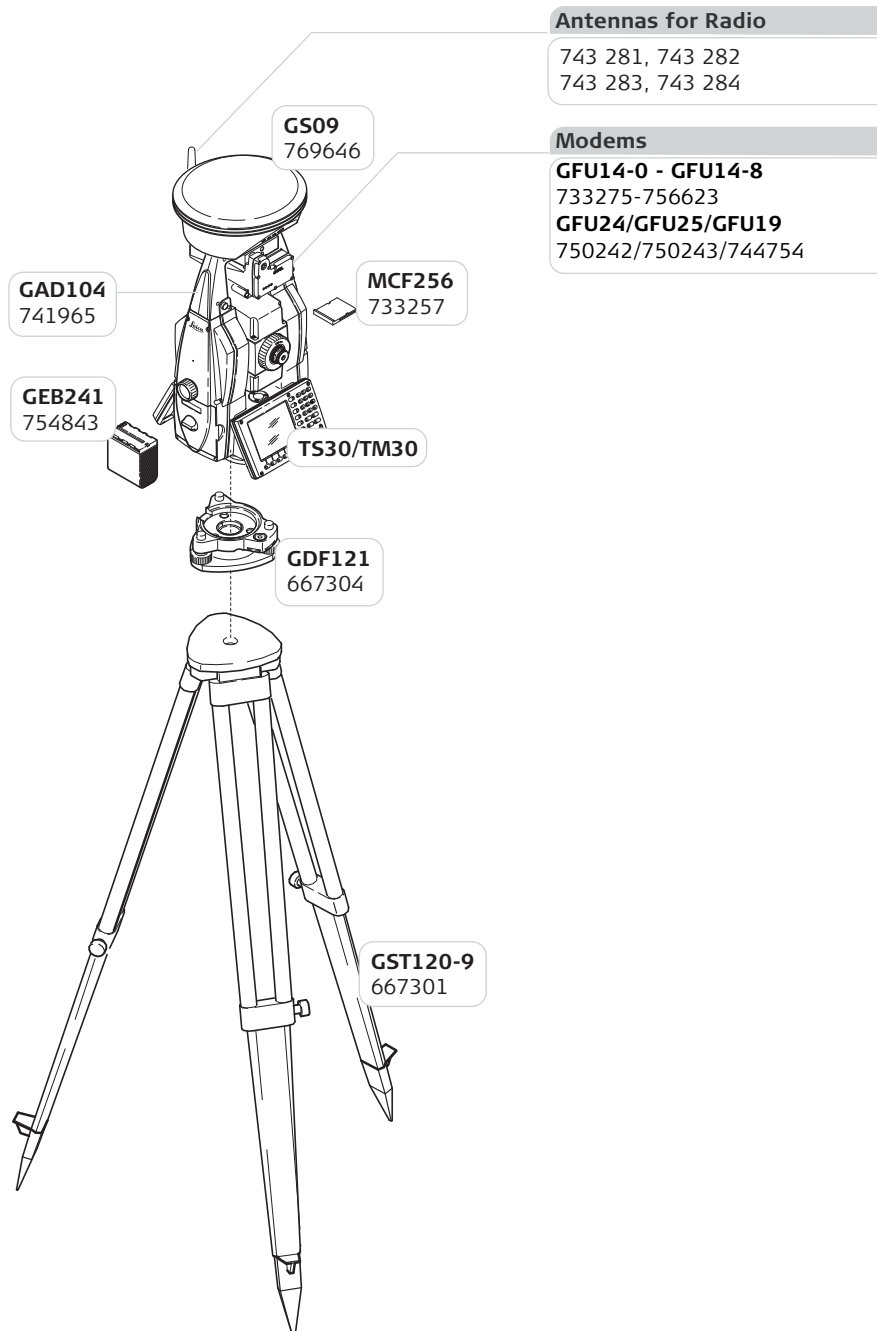
- SmartPole setup with GS12 GNSS receiver requires a Bluetooth mobile phone or CS15 UMTS field controller in order to receive RTK correction data.
- GFU RTK devices cannot be used for this SmartPole setup.


26.2 SmartPole using the GS15 GNSS Receiver



27 SmartStation

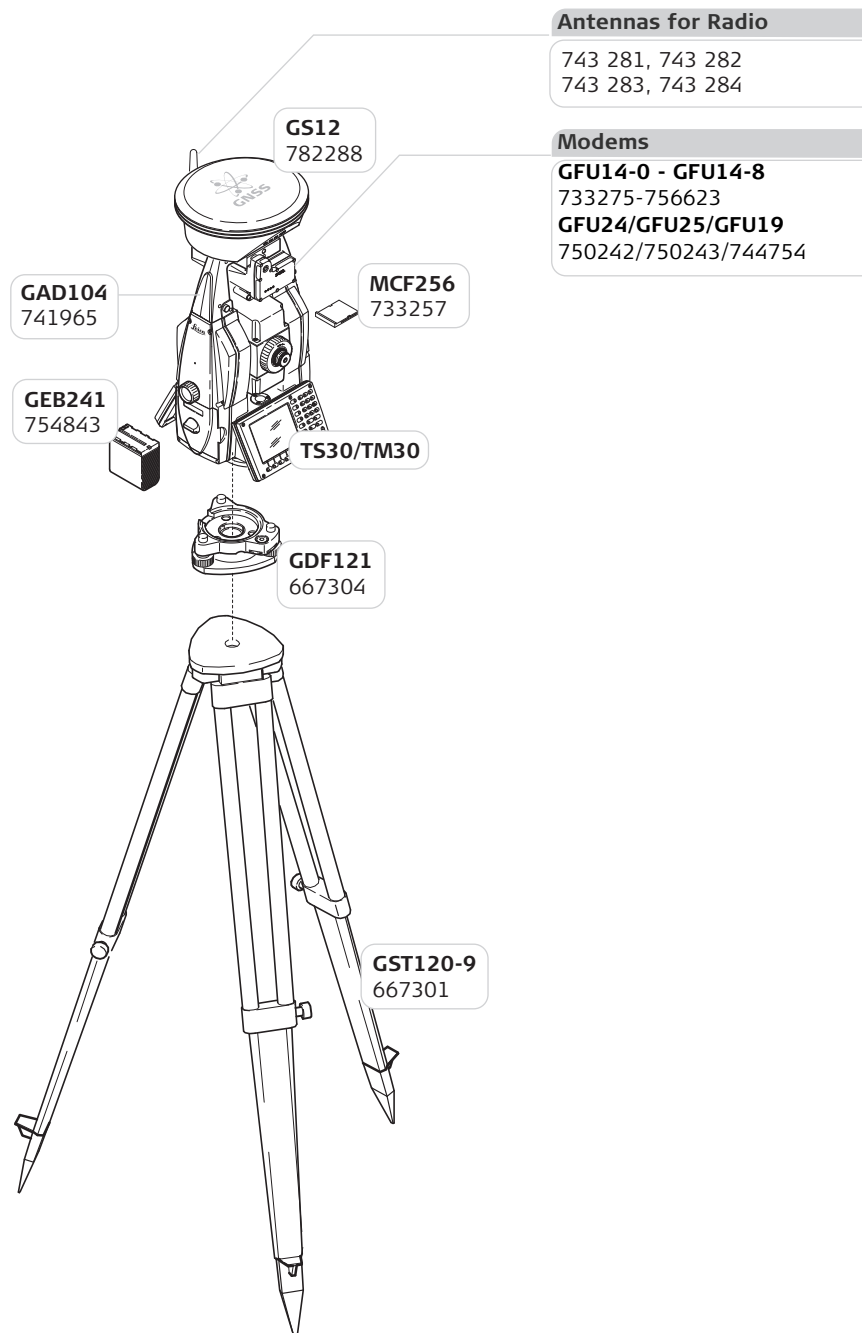
27.1 Using the GS09 Antenna



 GFU RTK device can be used for this SmartStation Setup.

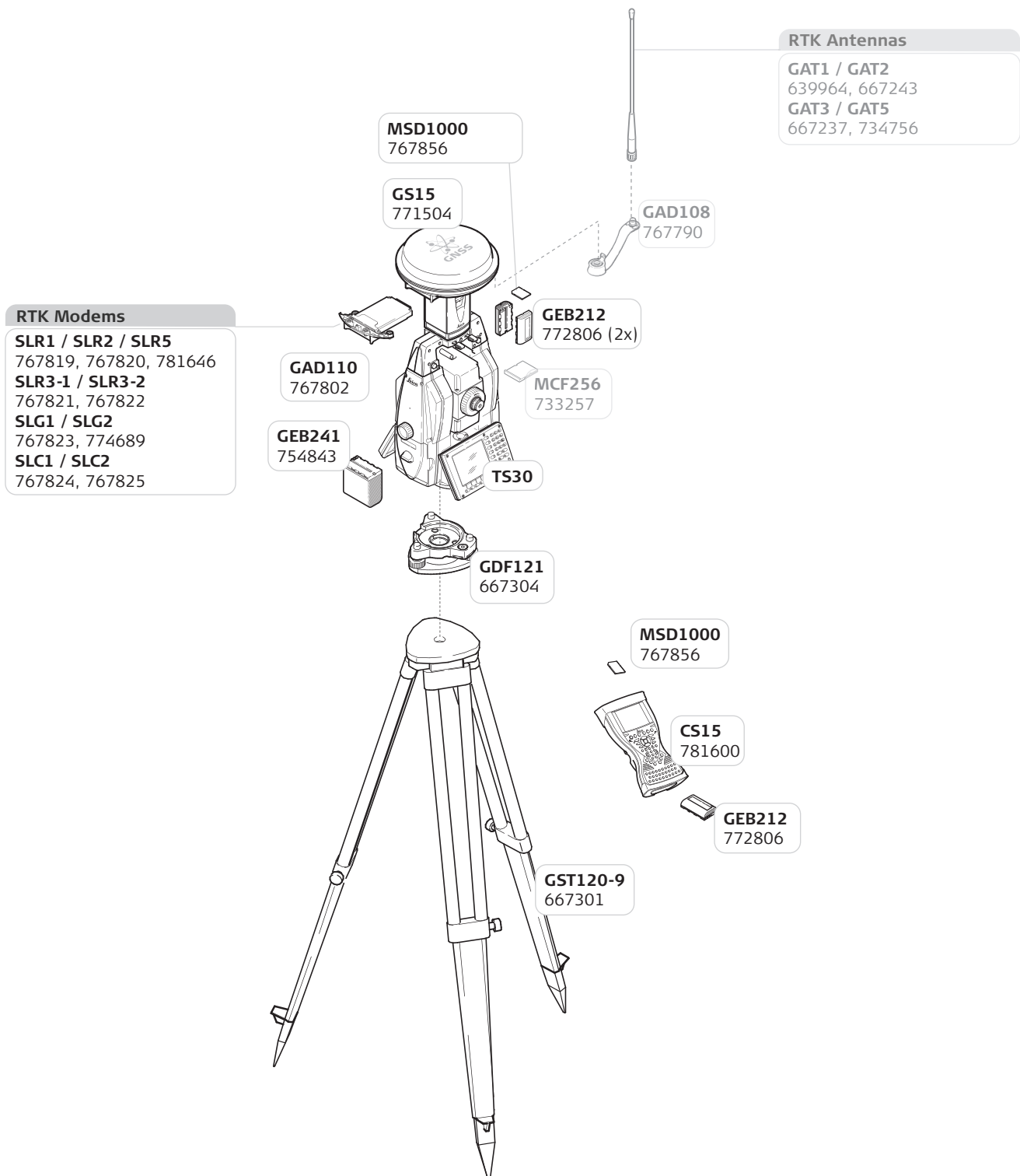
 Additional TPS licences for GS09 SmartStation setups can be found in the chapter 19.2.

27.2 Using the GS12 Antenna



- ☞ GFU RTK device can be used for this SmartStation Setup.
- ☞ Additional TPS licences for GS12 SmartStation setups can be found in the chapter 20.4.

27.3 Using the GS15 Antenna



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about our TQM program.

**Distance meter (Prism),
ATR and PowerSearch:**
Laser class 1 in accordance with
IEC 60825-1 resp. EN 60825-1

Laser plummet:
Laser class 2 in accordance with
IEC 60825-1 resp. EN 60825-1

Distance meter (Non-Prism):
Laser class 3R in accordance
with IEC 60825-1 resp.
EN 60825-1



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