Ge 4/4 II

The Prototype:

The 23 locomotives with the numbers 611 to 633 were put into operation 1973 (first series) and 1984 (second series). The last locomotive of the second series, named Zuoz and the number 633 was delivered in 1985. They replaced the Ge 6/6 I (crocodiles), which became increasingly susceptible to malfunctions.
The locomotives delivered by SLM and BBC are reminiscent of the Re 4 / 4II of SBB. The electrical part, however, differs significantly: controlled thyristors and diodes with controlled rectifiers (phase control) supply the motors with wavy direct current. The technology at that time did not allow recuperation braking, which is why the vehicles are fitted with a resistance brake.
The Bo'Bo 'locomotives have a top speed 90 km / h and weigh 50 tons. The hourly power is 1700 kW at 52 km / h. 185 t to 45 per mille going uphill and 245 t to 35 per mile on the flat is admissible as a pulled load, and a maximum of 400 t for double traction.

The picture shows locomotives of the series Ge 4/4 II in Klosters. On the right is locomotive 630 (Trun) in the state before general overhaul, behind it the already rebuilt 613 (Domat / Ems) with the square headlights and a changed position of the vehicle number at the front.
The second series 621-633 was already been delivered in the usual red color, the original green 611-620 units were repainted red later on. From 1999 onwards some machines received new rectangular headlights during revisions, but remained unchanged otherwise. Belocoeen 2004 and 2008, all 23 locomotives were comprehensively modernized within the framework of a refit program, whereby, among other things, a modern computer-based control system replaced analog control electronics.
Since their delivery, the locomotives have been deployed on the entire network on mainland passenger and freight trains, since 1997 also on the Arosa line. The machines can be operated in double traction in many ways. The BDt 1751-1758 series of cab control coaches, which were purchased in 1999, can be used to create shuttle trains.

Source Wikipedia

The Sound Project

The thyristor control used does not emit any noise. When the locomotive is running, you can only hear the fan and the collector sound.

The sound project is based on the Zimo Advanced Standard.

The decoder must have at least SW version 33.14.

MX 690 is suitable.

Specialties:

Some of the function outputs (connections) have properties. Please read first, then solder!!!!

The pantograph control consists of a preselection and the execution together with the corresponding noise during the raising and lowering process. The command is on the servo output 1 and 2. If motor drives instead of servos are used, the loco servo outputs can be used to drive servo switches.

Start the locomotive	without raising a pantograph	with Fu8
	With pantograph 1	with Fu10 and Fu8
	With pantograph 2	with Fu11 and Fu8

The Panto cannot be actuated without hearing all the switching sounds, pumps and idling noises. The reason is that on the prototype the idle noises would stop immediately if the loco were no longer connected to the overhead power supply.

The complex Swiss light switch features with the typical individual white light on the front of the train have been implemented with Fu combinations. Fu0 switches the lights on and off the same way as before. There are 3 white lights in the direction of travel and 1 white in the rear. The most common lighting can be adjusted with Fu 1, 19-26. Some rarely used combinations were not implemented.

The CVs 3, 4, 5 and 57, 154 and 158 have values which are very important for the proper function of the sound project. Changes here will cause the sound project to malfunction.
Users whose digital system does not have all 28 functions, or who wish order functions differently on the keys, can easily assign functions to other keys, using the Zimo function key mapping.

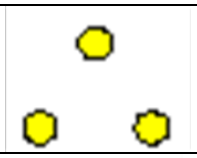
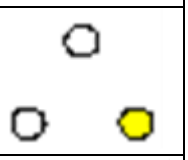
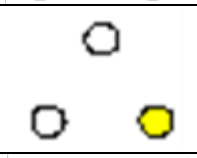
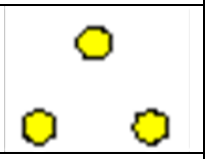
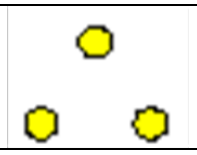
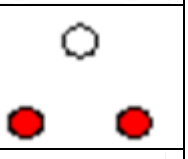
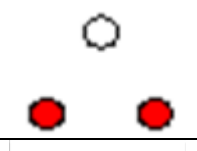
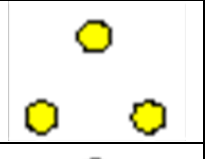
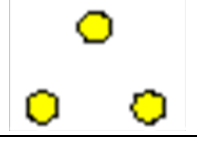
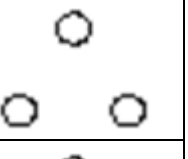
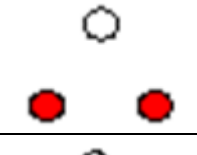
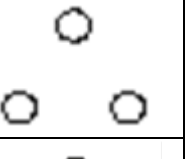
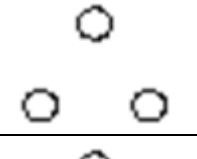
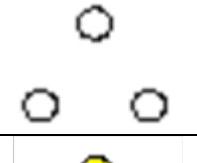
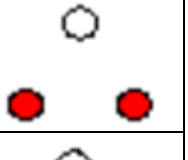
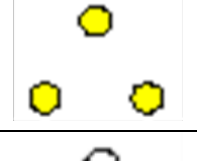
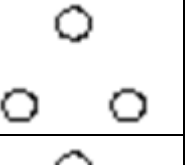
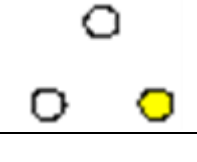
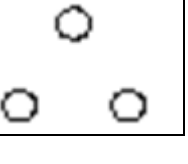
Program the desired key number as your value in the CV 400+Fu number and the whole function is mapped to another key. Please take care, as it is possible to map multiple functions to the same key! Please read the instruction sheet http://sound-design.white-stone.ch/Information.html

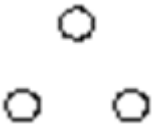
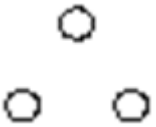
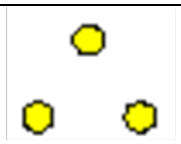
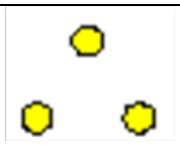
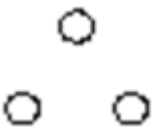
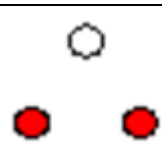
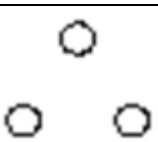
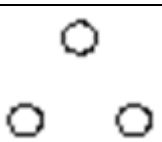
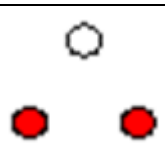
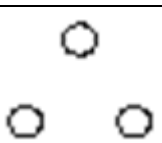
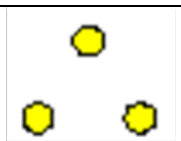
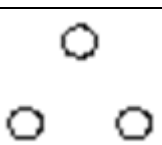
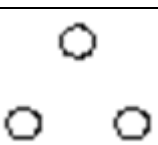
Function	Installation	Function Output	Sound function
F0	Light on	FA 0 v + 0 r	
F1	Rear lights	FA 1 +2	
F2	Whistle		Playable whistle
F3	Train conductor's whistle		Train conductor's whistle
F4	Cab 1 light	FA5v switches off when loco is moving	
F5	Cab 2 light	FA6r switches off when loco is moving	
F6	Light in passenger compartment	FA9	
F7	Lights normal or high beam	High beam FA 0,1,2	
F8	Sound on / off		Pantograph sound, main switch, auxiliary fan, then idling sounds
F9	Wheels screeching on curves		Sound of Wheels screeching on curves
F10	Preselection of Panto 1	Selection is implemented with Fu8	Selection is implemented with F8
F11	Preselection of Panto 2	Selection is implemented with Fu8	Selection is implemented with F8
F12	Servo coupler opens and loco moves back and forth	FA7 + 8 for optional electronic servo couplers	Uncoupling
F13	Coupling		Coupling and vacuum pump
F14	Vacuuming the brakes		Vacuum pump
F15	Air pressure for pantographs		Compressor
F16	Tunnel fader (muting)		Sound fades in or out in 2,5 sec
F17	Station announcement		Warning announcement
F18			
F19	Shuttle train on cab 2	FA0v + 1 + 3	
F20	Shuttle train on cab 1	FA0r + 2 + 4	
F21	multiple unit loco 1 with a train	FA0v + 1	
F22	multiple unit loco 2 with a train	FA0r + 2	
F23	multiple unit loco 1 without a train	FA0v + 1 + 3	
F24	multiple unit loco 2 without a train	FA0r + 2 + 4	
F25	No lights if more than 2 locos are pulling the train	xx	
F26	Standby	FA1 + 2	
F27	Volume -		Decrease loudness
F28	Volume +		Increase loudness

Random effect	Sound	
Z1	Vacuum pump immediate after stopping	
Z2	Vacuum pump	
Z3	Compressor	
Z4		
Z5		
Z6		

Input	Sound	
S1	Whistle	
S2	Wheels screeching on curves	
S3		

Swiss Light Mapping Table

		LFront 2 white LED front LBack 2 white LED rear FA1 lower white LED front FA2 lower white LED rear FA3 lower rote LED front FA4 lower rote LED rear	Front of Loco LFront FA1 FA3	Rear LBack FA2 FA4
F0 forwards (cab 1 in front)	LFront FA1 FA2	Pulling a train, Cars coupled at cab 2, standard train without cab control car		
F0 forwards (cab 2 in front)	LBack FA1 FA2	Pulling a train, Cars coupled at cab 1, standard train without cab control car		
F0 + F1 forwards (cab 1 in front)	LFront FA1 FA4	Locomotive without a train		
F0 + F1 backwards (cab 2 in front)	LBack FA2 FA3	Locomotive without a train		
F0 + F19 forwards (cab 1 in front)	LFront FA1	Pulling a train, Cars coupled at cab 2, Train with a cab control car		
F0 + F19 backwards (cab 2 in front)	FA3	Pushing a train, cars coupled at cab 2, Train with a cab control car		
F0 + F20 forwards (cab 1 in front)	LBack FA2	Pulling a train, Cars coupled at cab 1, Train with a cab control car		
F0 + F20 backwards (cab 2 in front)	FA4	Pushing a train, cars coupled at cab 1, Train with a cab control car		
F0 + F21 forwards (cab 1 in front)	LFront FA1	locomotive 1 in multiple unit with a train		
F0 + F21 backwards (cab 2 in front)	FA1	locomotive 1 in multiple unit with a train		

F0 + F22 forwards (cab 1 in front)	FA2	locomotive 2 in multiple unit with a train		
F0 + F22 backwards (cab 2 in front)	LBack FA2	locomotive 2 in multiple unit		
F0 + F23 forwards (cab 1 in front)	LFront FA1	locomotive 1 in multiple unit without a train		
F0 + F23 backwards (cab 2 in front)	FA3	locomotive 1 in multiple unit without a train		
F0 + F24 forwards (cab 1 in front)	FA4	locomotive 2 in multiple unit without a train		
F0 + F24 backwards (cab 2 in front)	LBack FA2	locomotive 2 in multiple unit without a train		
F0 + F25 forwards/ backwards	---	middle locomotive in multiple unit		
F0 + F26 forwards/ backwards	FA1 FA2	Stand by		

The representation of the red rear lights corresponds to the current lighting
In the period before 2000 for Swiss electric locomotives, running only on Swiss railway networks, the majority only had one red LED at the lower right.

Changed CVs

CV# 3 = 20 Acceleration rate
CV# 5 = 252 Top speed
CV# 29 = ---
CV# 33 = 13 Function mapp. F0f
CV# 34 = 14 Function mapp. F0r
CV# 35 = 0 Function mapp. F1
CV# 36 = 0 Function mapp. F2
CV# 37 = 0 Function mapp. F3
CV# 38 = 8 Function mapp. F4
CV# 39 = 16 Function mapp. F5
CV# 40 = 128 Function mapp. F6
CV# 41 = 0 Function mapp. F7
CV# 42 = 0 Function mapp. F8
CV# 43 = 0 Function mapp. F9
CV# 44 = 0 Function mapp. F10
CV# 45 = 0 Function mapp. F11
CV# 46 = 12 Function mapp. F12
CV# 47 = 16 n.a.
CV# 48 = 32 n.a.
CV# 56 = 11 Motor regulation: PID
CV# 60 = 204 Dimming general
CV# 115 = 96 Uncoupler control
CV# 116 = 195 Automatic uncouple
CV# 124 = 0 Shunting keys configuration (binary)
CV# 131 = 61 Effects F5
CV# 132 = 62 Effects F6
CV# 133 = 1 FO4 or FO10 for exhaust fan
CV# 134 = 10 Asym. stopping (ABC)
CV# 152 = 63 Dim mask FO7-FO12, RiBi
CV# 154 = 18 ZIMO configuration bits 2 (binary)
CV# 158 = 0 Several sound bits + RailCom variants
CV# 159 = 49 Effects F7
CV# 160 = 50 Effects F8
CV# 181 = 94 Servo 1 - Function Assignment
CV# 182 = 95 Servo 2 - Function Assignment
CV# 183 = 4 Servo 3 - Function Assignment
CV# 184 = 5 Servo 4 - Function Assignment
CV# 186 = 138 Special panto 1
CV# 187 = 139 Special panto 2
CV# 266 = 65 Total volume
CV# 275 = 170 Volume with no load slow travel
CV# 276 = 170 Volume with no load speed run
CV# 283 = 170 volume at full acceleration
CV# 286 = 170 Volume reduced driving noise during deceleration
CV# 287 = 70 Threshold for brake squeal
CV# 288 = 150 Brake squeal time spent driving
CV# 290 = 0 Thyristor pitch at medium speed
CV# 291 = 0 Thyristor pitch at maximum speed
CV# 293 = 0 Thyristor volume at constant speed
CV# 294 = 0 Thyristor volume during acceleration
CV# 295 = 0 Thyristor Volume at delay trip
CV# 297 = 25 Electromotor: begin of audible noise
CV# 298 = 10 Electromotor: begin of full volume
CV# 299 = 110 Electromotor noise depending on the speed of the pitch
CV# 311 = 0 General on/off button for functional noise
CV# 312 = 0 Drainage button
CV# 313 = 116 Mute button
CV# 314 = 25 Mute fade time
CV# 315 = 1 Random Z1 min interval
CV# 316 = 15 Random Z1 max interval
CV# 317 = 14 Random generator Z1 playback time
CV# 318 = 180 Random Z2 min interval
CV# 319 = 250 Random Z2 max interval
CV# 320 = 9 Random generator Z2 playback time
CV# 321 = 200 Random Z3 min interval
CV# 322 = 200 Random Z3 max interval
CV# 341 = 2 Switching input 1 Playback time
CV# 342 = 15 Switching input 2 Playback time
CV# 344 = 80 Follow-up time for fan noise
CV# 351 = 204 Smoke fan pwm at constant speed
CV# 353 = 32 Smoke heater max. operating time
CV# 359 = 0 Tap changer hight limit/loop time
CV# 361 = 0 Tap changer wainig time [0.1s]
CV# 363 = 0 Tap changer number of steps
CV# 376 = 128 Driving sound volume
CV# 395 = 120 maximal volume
CV# 396 = 27 Volume decrease key
CV# 397 = 28 Volume increase key
CV# 430 = 1 ZIMO Mapping 1 F-key
CV# 431 = 29 ZIMO Mapping 1 M-key
CV# 432 = 14 ZIMO Mapping 1 A1 forw.
CV# 433 = 1 ZIMO Mapping 1 A2 forw.
CV# 434 = 15 ZIMO Mapping 1 A1 rev.
CV# 435 = 2 ZIMO Mapping 1 A2 rev.
CV# 436 = 1 ZIMO Mapping 2 F-key
CV# 437 = 29 ZIMO Mapping 2 M-key
CV# 438 = 4 ZIMO Mapping 2 A1 forw.
CV# 440 = 3 ZIMO Mapping 2 A1 rev.
CV# 442 = 19 ZIMO Mapping 3 F-key
CV# 443 = 29 ZIMO Mapping 3 M-key
CV# 444 = 14 ZIMO Mapping 3 A1 forw.
CV# 445 = 1 ZIMO Mapping 3 A2 forw.
CV# 446 = 3 ZIMO Mapping 3 A1 rev.
CV# 448 = 20 ZIMO Mapping 4 F-key
CV# 449 = 29 ZIMO Mapping 4 M-key
CV# 450 = 4 ZIMO Mapping 4 A1 forw.
CV# 452 = 15 ZIMO Mapping 4 A1 rev.
CV# 453 = 2 ZIMO Mapping 4 A2 rev.
CV# 454 = 21 ZIMO Mapping 5 F-key
CV# 455 = 29 ZIMO Mapping 5 M-key
CV# 456 = 14 ZIMO Mapping 5 A1 forw.
CV# 457 = 1 ZIMO Mapping 5 A2 forw.
CV# 458 = 1 ZIMO Mapping 5 A1 rev.
CV# 460 = 22 ZIMO Mapping 6 F-key
CV# 461 = 29 ZIMO Mapping 6 M-key
CV# 462 = 2 ZIMO Mapping 6 A1 forw.
CV# 464 = 15 ZIMO Mapping 6 A1 rev.

CV# 465 = 2 ZIMO Mapping 6 A2 rev.
CV# 466 = 23 ZIMO Mapping 7 F-key
CV# 467 = 29 ZIMO Mapping 7 M-key
CV# 468 = 14 ZIMO Mapping 7 A1 forw.
CV# 469 = 1 ZIMO Mapping 7 A2 forw.
CV# 470 = 3 ZIMO Mapping 7 A1 rev.
CV# 472 = 24 ZIMO Mapping 8 F-key
CV# 473 = 29 ZIMO Mapping 8 M-key
CV# 474 = 4 ZIMO Mapping 8 A1 forw.
CV# 476 = 15 ZIMO Mapping 8 A1 rev.
CV# 477 = 2 ZIMO Mapping 8 A2 rev.
CV# 478 = 25 ZIMO Mapping 9 F-key
CV# 479 = 29 ZIMO Mapping 9 M-key
CV# 484 = 26 ZIMO Mapping 10 F-key
CV# 485 = 29 ZIMO Mapping 10 M-key
CV# 486 = 1 ZIMO Mapping 10 A1 forw.
CV# 487 = 2 ZIMO Mapping 10 A2 forw.
CV# 488 = 2 ZIMO Mapping 10 A1 rev.
CV# 489 = 1 ZIMO Mapping 10 A2 rev.
CV# 490 = 7 ZIMO Mapping 11 F-key
CV# 491 = 255 ZIMO Mapping 11 M-key
CV# 492 = 14 ZIMO Mapping 11 A1 forw.
CV# 493 = 1 ZIMO Mapping 11 A2 forw.
CV# 494 = 15 ZIMO Mapping 11 A1 rev.
CV# 495 = 2 ZIMO Mapping 11 A2 rev.
CV# 508 = 0 ZIMO Mapping dimming value 1-key
CV# 509 = 0 ZIMO Mapping dimming value 2-key
CV# 510 = 0 ZIMO Mapping dimming value 3-key
CV# 511 = 0 ZIMO Mapping dimming value 4-key
CV# 512 = 0 ZIMO Mapping dimming value 5-key
CV# 516 = 9 F2 soundnumber
CV# 518 = 72 F2 information on loop
CV# 519 = 7 F3 soundnumber
CV# 520 = 64 F3 volume
CV# 537 = 19 F9 soundnumber
CV# 538 = 181 F9 volume
CV# 539 = 72 F9 information on loop
CV# 546 = 11 F12 soundnumber
CV# 547 = 91 F12 volume
CV# 549 = 12 F13 soundnumber
CV# 550 = 64 F13 volume
CV# 551 = 8 F13 information on loop
CV# 552 = 18 F14 soundnumber
CV# 553 = 128 F14 volume
CV# 554 = 72 F14 information on loop
CV# 555 = 16 F15 soundnumber
CV# 556 = 128 F15 volume
CV# 557 = 8 F15 information on loop
CV# 561 = 8 F17 soundnumber
CV# 577 = 13 soundnumber squeal
CV# 585 = 14 Soundnumber electromotor
CV# 738 = 9 Soundnumber swithing input 1
CV# 740 = 19 Soundnumber switching input 2
CV# 744 = 17 Soundnumber Z1
CV# 745 = 128 Volume Z1
CV# 746 = 8 Information on loop Z1
CV# 747 = 17 Soundnumber Z2
CV# 748 = 128 Volume Z2
CV# 749 = 8 Information on loop Z2
CV# 750 = 16 Soundnumber Z3
CV# 751 = 128 Volume Z3
CV# 752 = 8 Information on loop Z3