

**ELECTRONIC SYSTEM
FOR PIPES ORGANS**

ORGDRIVE CP25

INFORMATION MANUAL

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1 - INTRODUCTION

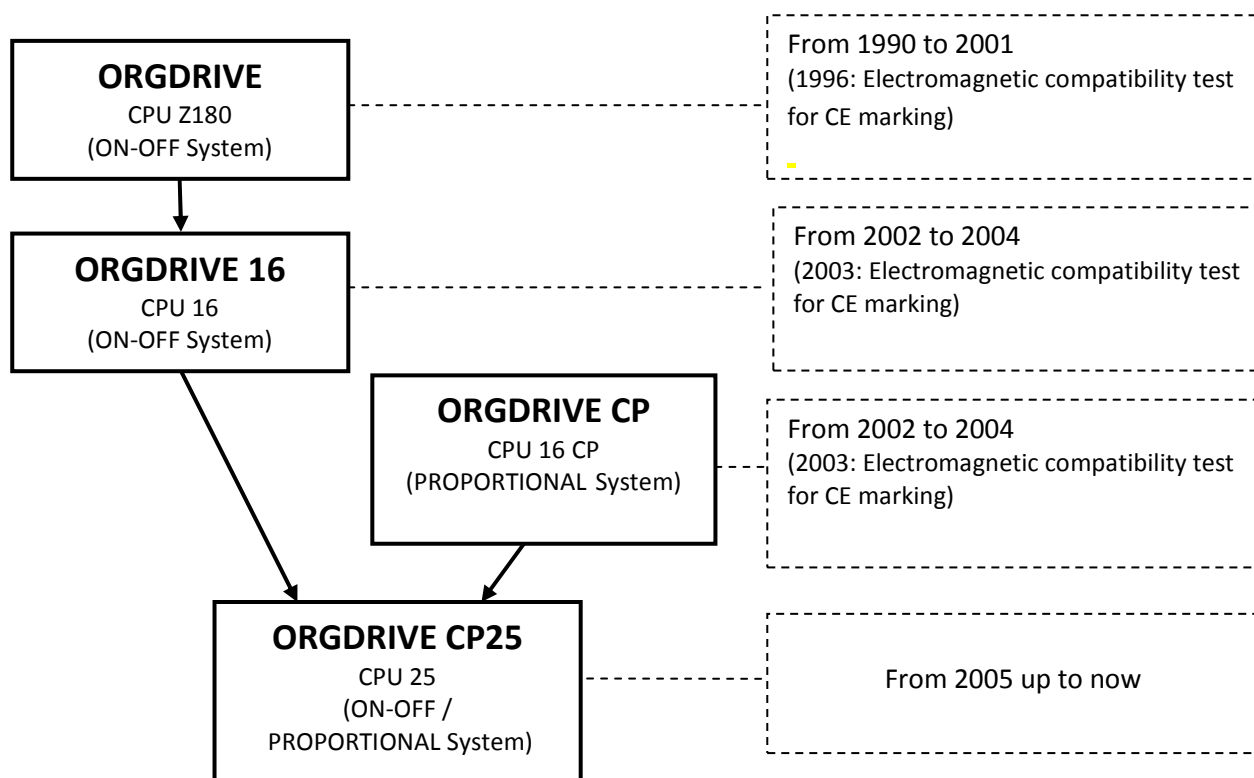
ORGDRIVE is a programmable digital system for pipe organs.

The union between the experience in the electronic field of the firm ELTEC automazioni and the experience of many organ builders, brought to the birth of a simple, flexible and reliable product suitable for the organ needs.

1.1 - EVOLUTION OF ORGDRIVE SYSTEM

The progress of technology and electronics, the always bigger needs of organ builders and organists, the opening of our firm to the Italian and foreign market (France, Belgium, Spain, Germany, Switzerland) and to the spurs that derive from it, the rising passion for the pipe organ are factors that led and lead now the ORGDRIVE system to undergo, in his twenty years, several reviews, development and improvements.

This evolution, that is shown in the following scheme, has always kept unchanged the basic philosophy of the system and the hardware compatibility.



The system in use today is **ORGDRIVE CP25**.

This system integrates, in only one product, the two previous system versions: ORGDRIVE 16 and ORGDRIVE CP.

Therefore **ORGDRIVE CP25** allows to handle both the traditional on-off systems and the proportional systems.

Since 2000, in fact, ELTEC has developed a new transmission system, that is added to the traditional on-off system: the PROPORTIONAL TRANSMISSION.

2 - TYPES OF TRANSMISSION

2.1 - ON-OFF TRANSMISSION

It is the traditional system used in the electric organs.

The pressure of a key produces the closing of an electric contact. This contact is acquired as input from the unit, that, as a result, gives an on-off output signal going to excite an on-off electromagnet placed on a valve (pallet).

To the movement of the on-off electromagnet it follows the movement of the pallet, that will be either completely opened or completely closed.

2.2 - PROPORTIONAL TRANSMISSION

It is an innovative transmission system, entirely studied and realised in all its parts from ELTEC automazioni.

In consequence of the pressure of a key, a proportional signal, produced by a Hall sensor, is sent to the system. As a result a proportional output signal is given; this signal goes to excite a PROPORTIONAL MAGNET (MAPR).

With this new transmission system it is possible to graduate the movement of the pallet proportionally to the pressure of the key, with a resolution of 128 positions.

The realisation of this system begins in consequence of the wish, passed on to us by organ builders and organists, to be able to make even more expressive the electric organ; electric organ that is disadvantaged as regards as the mechanical organ just in the control of the opening of the pallet.

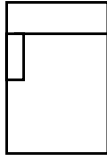
The result is surprising!



3 - PHILOSOPHY OF ORGDRIVE SYSTEM

To understand the philosophy of ORGDRIVE system first of all it is important to do a clear distinction between the two essential parts of the system: **HARDWARE** and **SOFTWARE**.

HARDWARE:



The whole MODULES that make up the system:

- Base module
- Input module
- Output module
- Proportional output module
- Static keyboard with hall sensors module

SOFTWARE:



CONFIGURATION PROGRAMME by which it is possible to activate all the organ functions, making, for each plan, an APPLICATION PROGRAMME.

The HARDWARE is entirely produced, assembled and tested by our firm.

The SOFTWARE, that is also produced by our firm, is directly supplied to the organ builder that can carry out the programming of the systems (hardware) by himself with the creation of an APPLICATION PROGRAMME.

ORGDRIVE system offers to the organ builder the TOTAL PROGRAMMABILITY OF THE WHOLE PLAN OF THE ORGAN.

This new philosophy, introduced for the first time in the sector and adopted in a positive way by many organ builders, has turned out to be successful because it gives to organ builder the possibility to organize one's application completely, with one's own times and one's own needs, without the necessity to transfer any specifications of the plan of the organ to our firm. It is enough to define and order the appropriate base module, with a number of inputs and outputs modules corresponding to one's own needs.

In short, the organ builder can:

- Make the estimate of the system by himself (counting the number of inputs and outputs).
- Order the hardware that one needs.
- Make the application programme, activating all the available functions at pleasure.
- Modify the plan removing or adding inputs, outputs and functions at pleasure without turning to ELTEC technicians for intervention.

In any case ELTEC firm can also:

- To provide technical assistance in the programming of the system (training on the use of the configuration programme, practical advices, check of the application programmes created by the Customer).
- **To provide already programmed systems, ready to be connected in console and in organ.** In this case the organ builder has to give our firm all the detailed technical data of the project of the organ.

So we can say that ORGDRIVE system is a INTEGRATED system: with the use of ONLY ONE opportunely programmed HARDWARE, it is possible to handle ALL the organ functions, from the simplest to the most complex ones.

It is not necessary to install any electronic board, scattered in the console and in the organ to handle the different functions.

3.1 - MAIN CHARACTERISTICS

In short, the four basic characteristics of the ORGDRIVE system are:

PROGRAMMABILITY

The programming of the system takes place by means of a PC and the ORGDRIVE configuration software.

Through this software, that is provided free with the system, ELTEC offers the total PROGRAMMABILITY OF THE WHOLE PLAN OF THE ORGAN.

MODULARITY - FLEXIBILITY

The system is made up with the assembly of some standard modules (base module, input module, output module, static keyboard with hall sensors module, etc..).

In case of enlargement, it is enough to add the number of modules that it needs.

Each part of the system is completely extractible.

All the modules are identified by a code and a revision reported on the module "INTERNAL ORDER" enclosed to the installation manual of the system.

Each board produced has the number of the production lot for the identification and the traceability.

RELIABILITY

Hardware plan executed with the same standard used for industrial system.

Use of first-rate components.

Electromagnetic compatibility test for CE certification carried out in specialized workshops.

The system is produced according to criterion and practices ISO 9000.

SIMPLICITY

During the phase of installation and starting of the system the organ builder is completely self-sufficient, without to turn to ELTEC technicians for intervention.

The system is equipped with some signalling very useful to verify the correct working or in search of possible anomalies.

Moreover the system has also two modes of diagnosis:

AUTOMATIC DIAGNOSIS (on line): it is always carried out when the system switches on.

Automatic test of the RAM, EEPROM, CONFIGURATION of the I/O boards, SERIAL LINE for MASTER - SLAVE communication.

MANUAL DIAGNOSIS (not on line): it is carried out BY REQUEST when the system switches on.

Test INPUT, OUTPUT, TIMER, SLIDER, PROPORTIONAL MANUALS and SERIAL LINE for the verification of the MASTER -SLAVE communication.

4 - CONFIGURATION PROGRAMME

“ORGDRIVE CP25 CONFIGURATION PROGRAMME allows to activate, in a simple and intuitive way, all the available organ functions. It is provided free to the organ builder in the moment of the purchase of the ORGDRIVE system.

The software must be installed on a Personal Computer (WINDOWS 98, XP, VISTA, 7 operating system) with RS232 serial port. In case the PC has not the RS232 serial port, it is possible to use a USB-SERIAL converter.

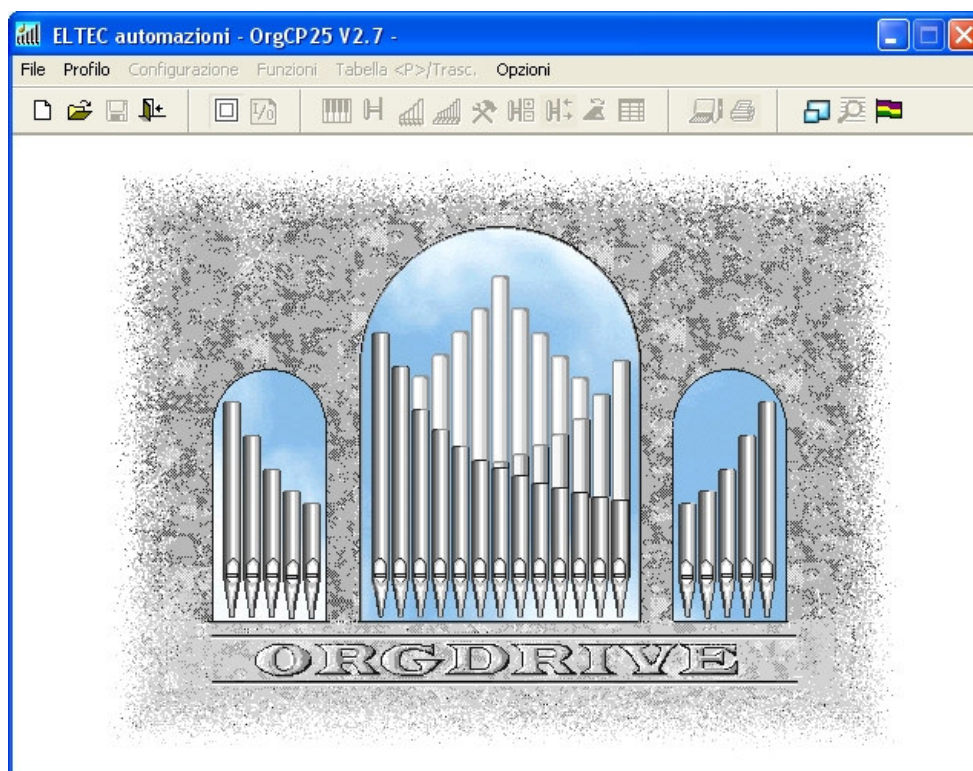
With the configuration programme an application programme will be created for each plan. Through the serial line (COM1-COM12) and a special cable this programme will be transfer in the memory of the CPU of ORGDRIVE units.

4.1 - PROGRAMMABLE FUNCTIONS WITH THE ORGDRIVE CP25 CONFIGURATION PROGRAMME

- Configuration monocable, multicable, multimaster or multislave
- On-off transmission, proportional transmission
- Fixed structure, Variable structure
- Number of selectors for variable structure
- Input order, output order
- Stops names, keyboards names, Pipe groups output names
- Number of contacts keyboards
- Number of analog keyboards (Hall sensors)
- Offset key (with analog keyboards)
- Attack point, Release point (with analog keyboards)
- Fixed attack/release point, Variable attack/release point (with analog keyboards)
- Keyboards exchange
- Soprano, Bass
- Pedal division
- Number of stops
- Control by magnet, push-button, electric-manual stops
- Number of the outputs of the stops in the organ
- Static auxiliary functions, dynamic auxiliary functions
- Number of pipe groups, Number of their outputs
- On-off pipe groups, Proportional pipe groups
- Combinations among keyboards, stops and pipe groups (in a graphic way)
- Autofill (automatic programming of unions and couplers)
- Fixed combinations
- Crescendo
- Enabling of the crescendo
- Automatic pedal
- Transposer
- Mixtures
- Tutti - Tuttis alternatives
- Vents, Recalls
- Unison vent
- Sustain (add mode)
- Sustain (replaced mode)
- Control of the opening of the magnet (with proportional system)
- Deactivation of the proportional transmission (with proportional system)

- Activation of the transmission radio-cable
- General captures
- Number of pistons (for general captures)
- Number of levels (for general captures)
- Number of password (only with DG25)
- Standard memory, Extended memory
- Insert / Delete combinations
- Divisional captures
- Number of pistons (for divisional captures)
- Number of pistons groups (for divisional captures)
- Capture control standard, capture control for level
- Excitation time of the capture magnets
- Stored command
- Reversers
- Expressions
- Parallel among expressions, parallel among slider
- Stops adapter (for multi master configuration)
- Printing of the whole documentation about the plan (inputs/outputs, connection plan, sticky labels, etc.)
- Serial line RS232 for data transmission to the units
- Selection of the language (Italian, English, French)

All the controls can be selected by push button or by switch, with or without lamp.



4.2 - PROGRAMME MENU

FILE

New, Open, Save, Save as, Exit

(Basic menu with traditional controls).

SOURCE LISTS

Modification of the basic profile: Input order - Output order - Stop names - Keyboard names - Pipe group output names.

(It modifies the archives of all names of the stops, keyboards, groups and of the inputs/outputs order. It can be used as start for the creation of a new application programme).

CONFIGURATION

Nr. console/organ's divisions:

Nr. consoles - Nr. organ's divisions (max 5) - on-off monocable - on-off multicable - Proportional - Fixed structure - Variable structure - Selectors used.

(It allows to choose the kind of configuration, the kind of transmission, the kind of structure).

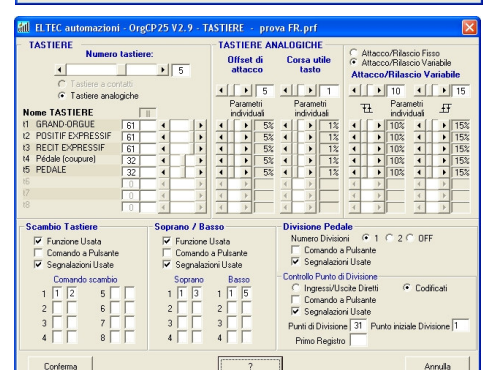
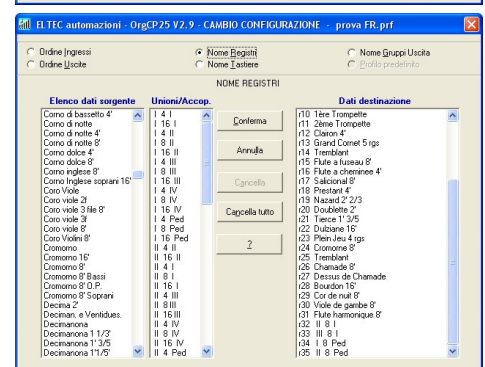
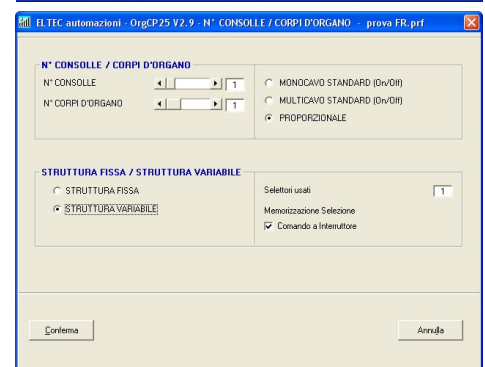
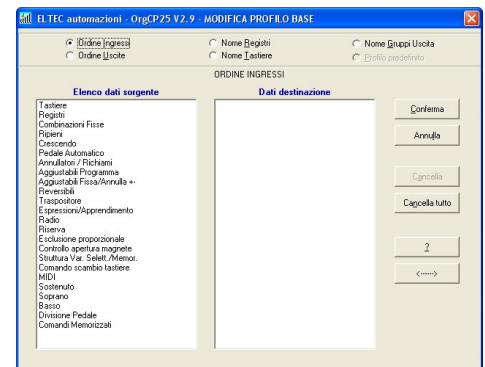
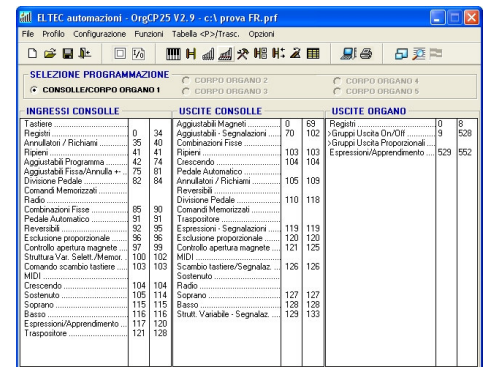
I/O Order and Stops/Keyboards/Pipe group output names:

Input order (It is possible to set the sequence of the functions. According to this choice, the programme set the address of the inputs in an automatic way and consequently its wiring on the connection strips) - Output order (As for the inputs) - Stop names (It is possible to associate the stops name) - Keyboard name (It is possible to associate the keyboards name) - Pipe Group Output names (It is possible to associate the groups name).

FUNCTIONS

Keyboards: N. keyboards (max 8) - On/off keyboards - Analog keyboards (with hall sensors) - N. keys (max 61) - Offset key (initial idle stroke) - Useful stroke (stroke where the key is operating) - Fixed attack/release - Variable attack/release (setting of a hysteresis value that allows to change the attack/release point) - Keyboards exchange (max 8) - Parallel between keyboards (for multimaster system where a secondary console has less keyboards of the main console) - Soprano and Bass - Pedal division - Control of the division point.

Stops: N. stops (max 255) - Selection of the type of stops (latching switch, momentary switch, double action electric + mechanical) - Unison stops (stop that cancel the direct note leaving play the deep and the high note) - Enable stops output (selection of the stops that have to have an



output in organ) - Auxiliary functions static mode (with mixtures, crescendo etc. the stop keys don't move) – Auxiliary functions dynamic mode (with mixtures, crescendo etc. the stop keys move themselves).

Pipe group outputs: N. output groups (max 32) – N. outputs for each group (max 127) - Selections of the proportional groups GP (groups that provide for the use of proportional magnets. It is therefore possible to provide for proportional windchests and on-off windchests) – Selection of the main group MG (to simplify the automatic drawing up of the unions and the couplers).

Output groups are the different sound's divisions provide with N magnets: N=61,73,12, 32, 44 etc.

Examples:

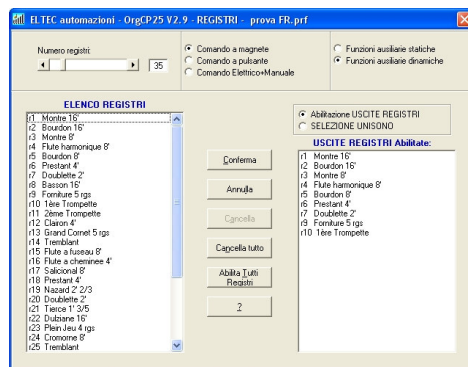
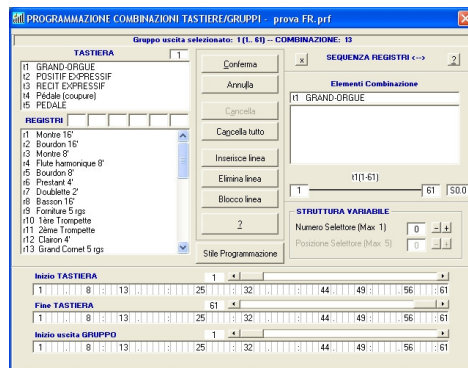
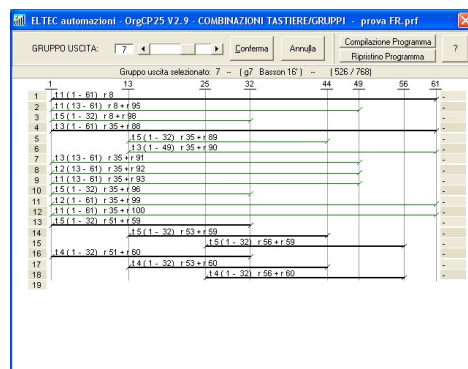
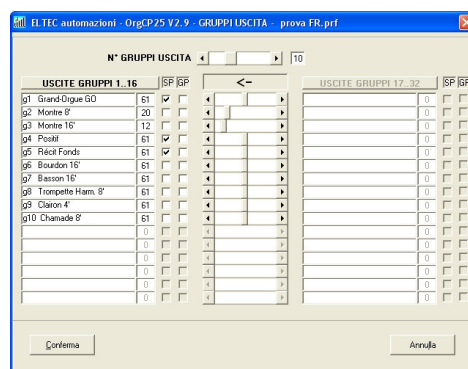
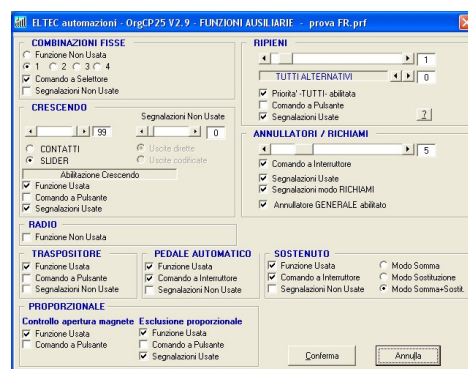
- a) Windchest with 10 stops and 61 magnets = 1 group
- b) 12 notes out of the windchest = 1 group
- c) 2 electric stops of the pedal, with 44 magnets = 1 group

Keyboard/output combinations: For each group you programme all the conditions that enable the relevant outputs according to the keyboard and the stop. The programming happen in a graphic format. For each line it is possible to set: number of the keyboard, the first key of the keyboard, the last key of the keyboard, the first output of the group activated from the first key of the keyboard, one or more stops in AND(max 6) that activate the output. When the programming is finished, the function “Couplers line” allows to insert in an automatic way the unions and the couplers. The function “Recall source lines” allows to go back to the source programme. It is also possible to lock some lines so that they are not automatically filled. If the structure of the organ is variable, it is possible to programme for each line the selectors that have been previously set.

Auxiliary functions: Fixed combinations (pp, p, mf, f, ff, ventil. Max 4 groups) - Crescendo (with contacts or with slider. Max 99 steps. Direct outputs: max 32 signals. Coded outputs for two digit numerical display) - Crescendo enable - Automatic pedal - Tutti (Max 16) - Exclusive tutti (one excludes the other) - Ventil / Recalls (Max 24) - Transposer (-4, +3) - Radio (input and output for the automatic activation) - Magnet control (to set the opening value of the proportional magnet) - Disable proportional.

Capture Combinations:

GENERAL captures (they memorize all the stop keys): N. pistons (max 32) - N. display levels (max 999) - Selection of the mode of advance: standard, level - N. password (for DG25) - Standard or extended memory.



DIVISIONAL captures (they memorize only the stop keys of each manual):

N. pistons (max 8) - N. groups of divisional pistons (max 8) - Management of the levels (The levels of the particular captures can be managed with the levels of the general captures or in an independent way, with the programming of a selector with a maximum of 16 inputs).

Stored commands (max 64) (Button controls with lamp, memorized in the captures. They can be used to insert button stops or to memorize some functions as Sostenuto, Keyboard exchange, etc... in the captures).

Reversers: Selection of the reverser control stops (example: I8II, II8II, I8Ped, II8Ped, etc), programming of the lamps (on when the stop is working).

Expressions: Contacts expression with input and output on-off (max 64) - Expression with slider (max 3) (directly connected to the unit, without the use of the input) - Programming of the decimal or binary output in organ - Programming of the number of signals of each slider in console.

<P> TABLE / STOPS ADAPTER

<P> **Table:** Programming of the table that enables or cancel the stops in the function of: fixed combinations, tutti, crescendo, automatic pedal, ventsils.

Stops adapter: In the last column it is possible to programme the STOP NUMBER ADAPTER of the stops, that is used when several console with different stops have to be connected to the organ.

OPTIONS

Reload Current File (it keeps in memory the path of the last file opened) - Full screen - Global program's test (it verify that all the data introduced are valid) - TX data to the ORGDRIVE (Menu for the sending of data to the system. Selection of the transmission to the console or to different organ's divisions. Selection of the serial door RS232 COM1 - COM12) - Print configuration (Complete print of all the documents or partial print of each single sheet).

5 - INPUT AND OUTPUT DEFINITION

5.1 - INPUT

INPUT means each control signal that must be read from the unit to enable a specific function or a specific output.

Therefore, inputs are all the controls of the console (push-buttons, switches, counters, etc.).

INPUTS OF THE CONSOLE

- Inputs of the contact keyboards
- Inputs of the stops keys, unions and couplers
- Inputs of the auxiliaries functions (fixed combinations, mixtures, automatic pedal, crescendo, vents, transposer, sostenuto, etc.)
- Inputs of the captures
- Inputs of the expression

5.2 - OUTPUT

OUTPUT means each control signal that the unit supplies, according to the state of the inputs.

Therefore, outputs are all the controls of the actuator (magnets, lamps, expressions, etc.).

OUTPUT OF THE CONSOLE

- Outputs for the ON - OFF controls of the stop keys
- Outputs for the lamps

OUTPUT OF THE ORGAN

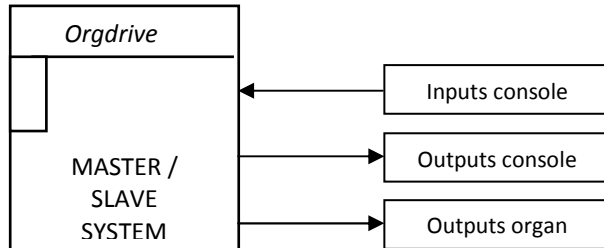
- Outputs for the slider control of the stops action
- Outputs for the on-off magnets
- Outputs for the proportional magnets
- Outputs for the controls of the expression

6 - ORGDRIVE SYSTEM CONFIGURATION

6.1 - MULTICABLE SYSTEM

The MULTICABLE system involves the use of a single unit, installed in console or in organ, which simultaneously manages the inputs of the console, the outputs of the console and the output of the organ.

If it is installed in console it needs the connection by multiple cables with the magnets in organ because it has to command the outputs as well.



In the past the multicable system was very used in the electro-mechanical organs. With the coming of the electronics it was then replaced by the monocable system. Nevertheless it is still used in the electric organs with built-in console, or in the mechanical organs with electric parts (electric pedal, electric unions, captures system, etc.)

6.2 - MONOCABLE SYSTEM

The SINGLE WIRE system involves the use of two units, one MASTER and one SLAVE. It is defined:

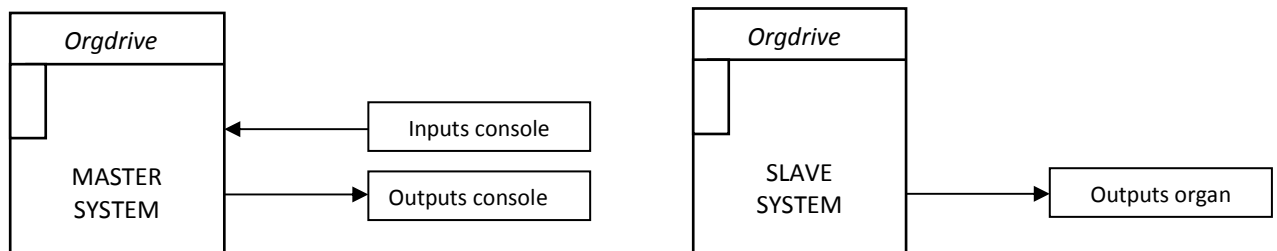
MASTER UNIT: Unit installed in CONSOLE
It manages the INPUTS and the OUTPUTS of the console

SLAVE UNIT: Unit installed in ORGAN
It manages the OUTPUTS of the organ

The two systems are connected between them through a single little cable. The data transmission happens through a optoisolated high-speed serial line and with three levels of lightning protection

The maximum distance between the MASTER unit and the SLAVE one is:

- 400 mt (ELTEC cable) for ON-OFF system
- 200 mt (ELTEC cable) for PROPORTIONAL system



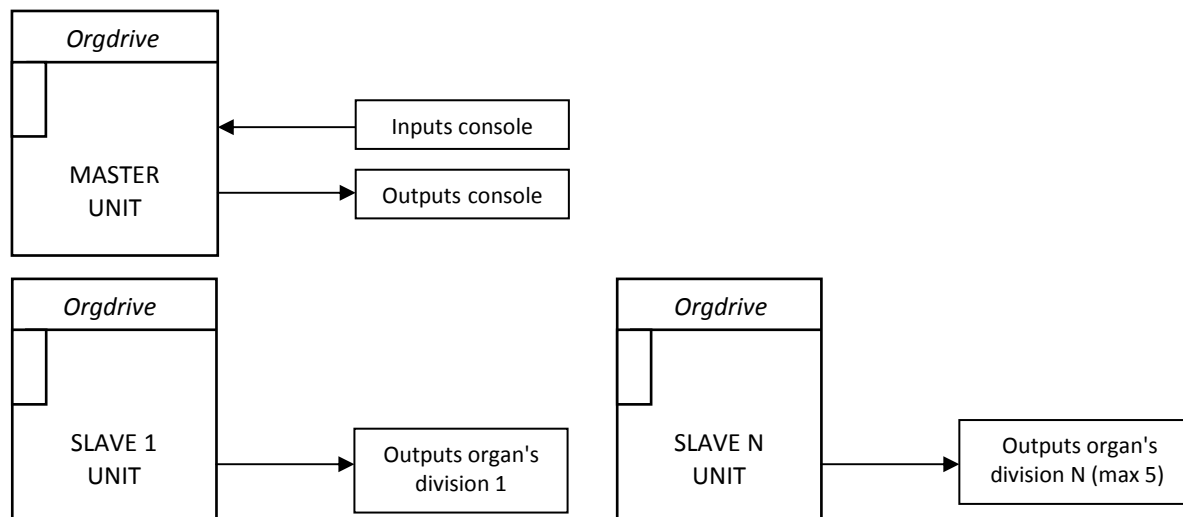
Up to now, thanks to its simplicity in the installation, the MONOCABLE system is without doubts the more used.

In fact, often, the console and the organ's division are very far from each other and it will not be easy to use dozens of multicables.

6.3 - MULTISLAVE SYSTEM

The MULTISLAVE system involves the use of a MASTER unit, and of N. SLAVE units (N: max 5), connected among them through a single little cable. The same serial line that starts from the MASTER unit cascaded all the SLAVE systems that are present.

Each SLAVE works independently and manages only the outputs of its own organ's division.



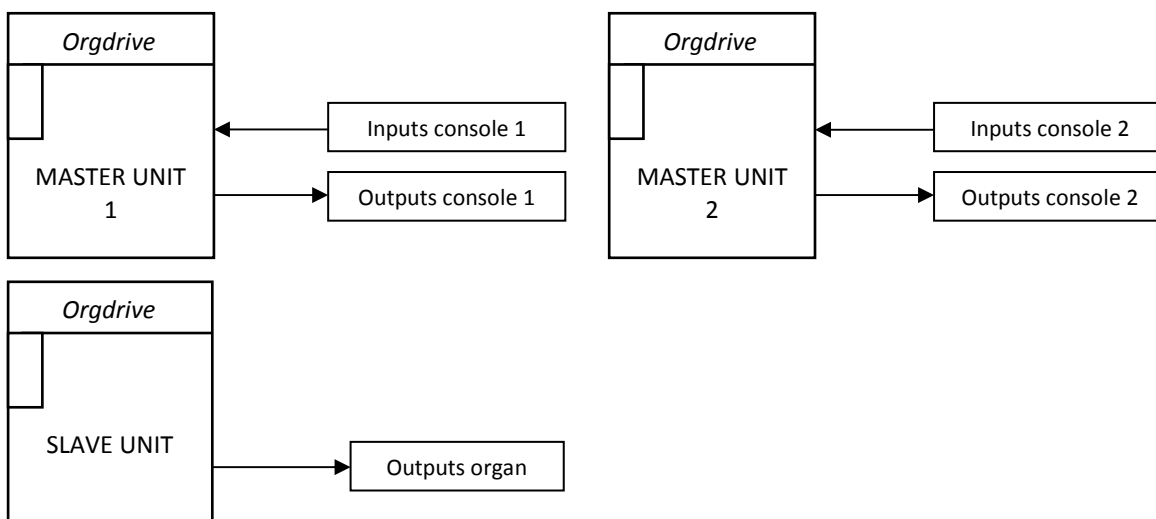
This configuration is used for instrument with more than one organ's division separated from one another but also to simplify the wiring on the organs of considerable size and built on several levels in height.

6.4 - MULTIMASTER SYSTEM

The MULTIMASTER system involves the use of more than one MASTER unit (usually two) and of one SLAVE unit, connected among them through only one little shielded cable.

Serial lines are connected to a selector, that establishes the priorities. Only the console with higher priority will be activated. It is not possible to play the organ from more than one console at the same time.

With the configuration programme, through the function of STOPS ADAPTER and MANUALS PARALLEL, it is possible to adapt the stops and the manuals of a "secondary" console to those of the "main" console.



This configuration is therefore used on organs with more than one console.

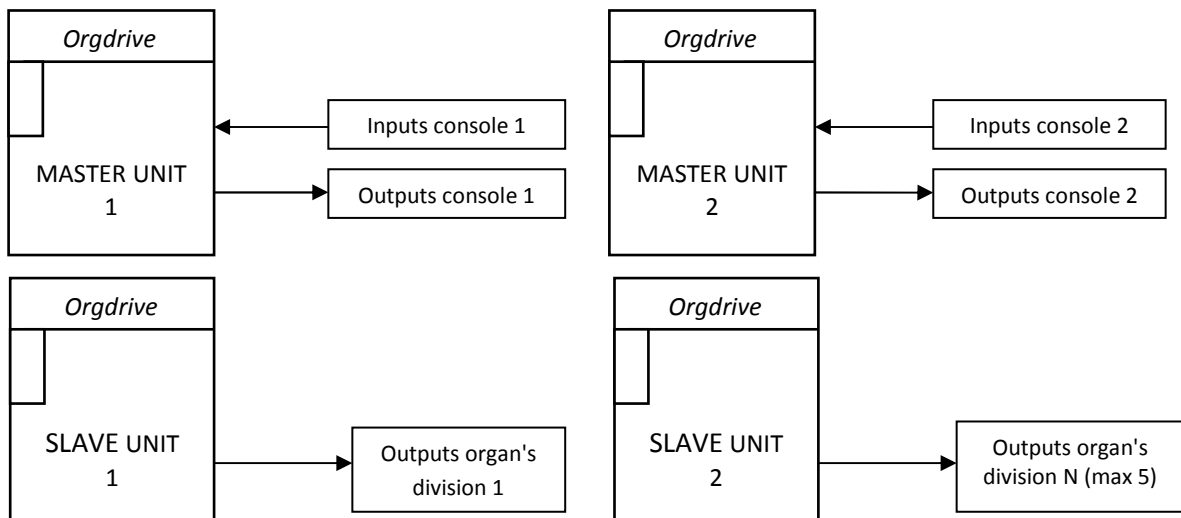
For example, on the mechanical organs where to a mechanical console with electrical unions and captures it is added a second electrical console that is playable at a distance.

Or on purely electric organs that provide, in addition to a main console complete with all the controls (which can be used for concerts), a smaller secondary console (which can be used for the accompaniment of the liturgy).

6.5 - MULTIMASTER – MULTISLAVE SYSTEM

The MULTIMASTER – MULTISLAVE system involves the use of more than one MASTER units (usually two), and of N. SLAVE units (N: up to 5).

It is therefore the union of the two systems mentioned above.



6.6 - RADIO TRANSMISSION SYSTEM

The RADIO TRANSMISSION SYSTEM allows to do the transmission of the data between the MASTER unit (console) and the SLAVE unit (organ) without using the serial cable. It is enough to install a transmitter in the console and a receiver in the organ.

The advantages that this kind of transmission offers are:

- Elimination of the serial cable between the console and the organ that is not always easy to apply
- Possibility to move freely the console, without being tied to the cable length and the location of the sockets.

6.7 - RADIO/CABLE TRANSMISSION SYSTEM

It is also possible to have both the RADIO TRANSMISSION and the CABLE TRANSMISSION. In this case, using a selector (Code ORGSRG), the selection happens automatically with the insertion of the cable, and so:

- When the cable is connected: working with CABLE TRANSMISSION
- When the cable is not connected: working with RADIO TRANSMISSION

7 - MODULES THAT FORM THE SYSTEM

ORGDRIVE system is a modular system, composed of a series of modules.

During the construction these modules are tested separately, assembled as needed and then retested together with the complete system to verify all functions.

The definition of the system is then made by adding up the different modules and adding accessories.

Each of the tables below contains the list of material included in the different modules.

Any variations to the standard modules must be communicated in the order (Ex: no standard cable length).

7.1 - BASE MODULE

The BASE MODULE (indicated as MBxxx in the case of an on-off system, MPxxx in the case of a proportional system) is the main module of the system.

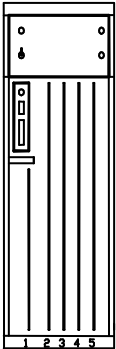
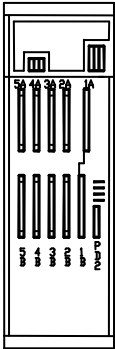

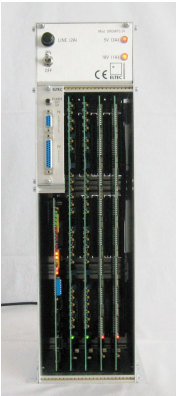
The base module MBxxx and MPxxx includes:	(reference to the price-list)
N. 1 Rack (with profiles and cover panels)	
N. 1 Back panel connection of the BUS of all the cards (Code ORGBPxx)	
N. 1 Back panel connection serial (Code ORGVAM, ORGVAS)	
N. 1 Back panel connection display and slider (Code ORGF116, ORGF125)	
N. 1 Power supply (Code ORGMPSxx)	
N. 1 CPU card (Code CPU25)	
N. 1 Serial card (Code ORGVIM, ORGVIES, ORGVIE, ORGSIEM, ORGSIES)	

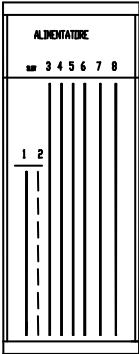
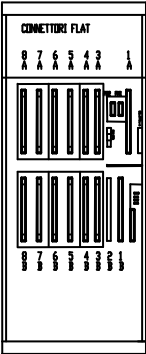

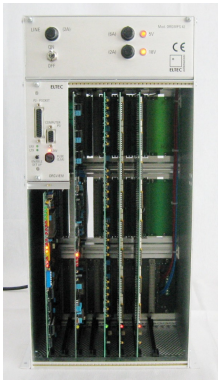
RACK

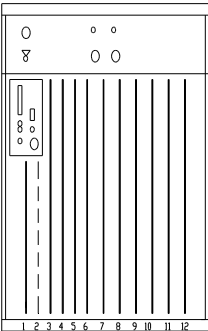
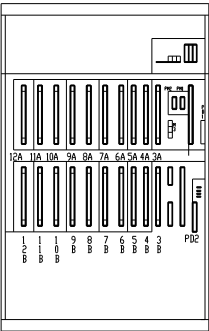


The rack, exclusively built for this application, is in alodine treated aluminium, closed with panels both in the front and the back.

Four models, different for dimensions, allow to choose the more suitable according to one's own need:

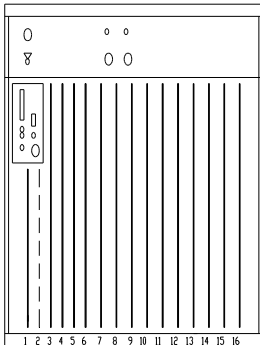
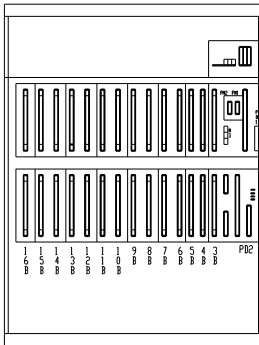



RACK 24 TE	DIMENSIONS	N° of SLOT for I/O cards	NOTES
	Height: 480 mm Width: 130 mm Depth: 210 mm	4	Without serial line (only multicable)
	<div>VISTA DAVANTI (FRONT VIEW)</div> 	<div>VISTA RETRO (FRONT VIEW)</div> 	
			

RACK 42 TE	DIMENSIONS	N° of SLOT for I/O cards	NOTES
	Height: 480 mm Width: 230 mm Depth: 210 mm	6	
	<div>VISTA DAVANTI</div> 	<div>VISTA RETRO</div> 	
			

CESTELLO 60 TE	DIMENSIONS	N° of SLOT for I/O cards	NOTES
	Height: 480 mm Width: 320 mm Depth: 210 mm	10	
	<div>VISTA DAVANTI (FRONT VIEW)</div> 	<div>VISTA DIETRO (REAR VIEW)</div> 	
			

RACK 84 TE

DIMENSIONS		N° of SLOT for I/O cards	NOTES
Height:	480 mm	14	
Width:	440 mm		
Depth:	210 mm		
VISTA DAVANTI (FRONT VIEW)		VISTA DIETRO (REAR VIEW)	
			



7.2 - INPUT MODULE

Three input board are available:

- I120** - board with 120 NEGATIVES inputs (standard)
- I60** - board with 60 NEGATIVES inputs (standard)
- I120P** - board with 120 POSITIVES inputs (special)

SPECIFICATIONS:

- Optoisolated inputs
- Input voltage: 12 ÷ 24 V
- Input current: 7 mA a V=18V

The I120 module includes:

(reference to the price-list)

- N. 1 Input board (Code I120B)
- N. 1 Back panel board/flat connection (Code ORGFI)
- N. 1 120 inputs connection strip (Code ORGMIE)
- N. 2 Flat cables 64 conductors ORGFI/ORGMIE connection L = 2 m (Code 5000-200)

The I60 module includes:

(reference to the price-list)

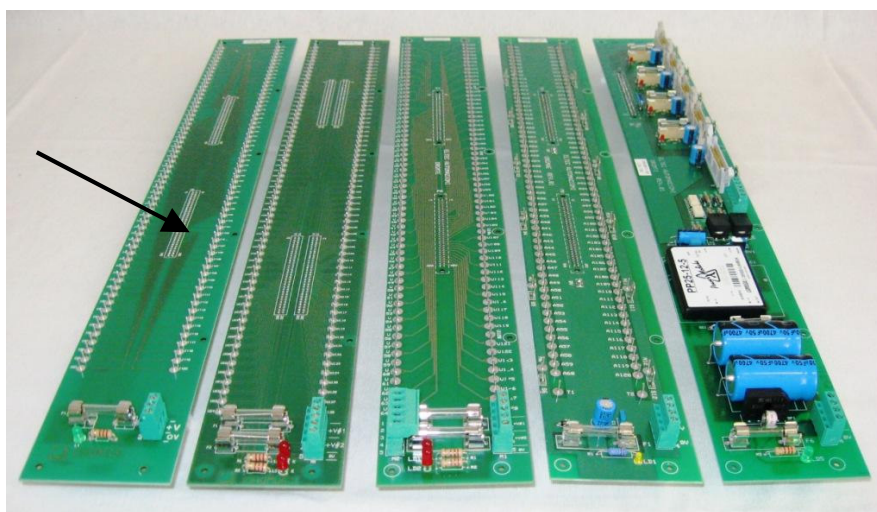
- N. 1 Input board (Code I60B)
- N. 1 Back panel board/flat connection (Code ORGFI)
- N. 1 120 inputs connection strip (Code ORGMIE)
- N. 1 Flat cable 64 conductors ORGFI/ORGMIE connection L = 2 m (Code 5000-200)

The I120P module includes:

(reference to the price-list)

- N. 1 Input board (Code I120P)
- N. 1 Back panel board/flat connection (Code ORGFI)
- N. 1 120 inputs connection strip (Code ORGMIEP)
- N. 2 Flat cables 64 conductors ORGFI/ORGMIEP connection L = 2 m (Code 5000-200)

INPUT CONNECTION STRIP (Code ORGMIE, ORGMIEP)



- 1 strip connect 120 inputs (1 input card I120)
- External connection: solder pin
- Unit connection: connectors for flat cable 64 conductors
- Protection fuses

7.3 - STANDARD OUTPUT MODULE

Three output board are available:

- U64** - board with 64 outputs **POSITIVES** (standard)
- U32** - board with 32 outputs **POSITIVES** (standard)
- U64N** - board with 64 outputs **NEGATIVES** (special)

SPECIFICATIONS:

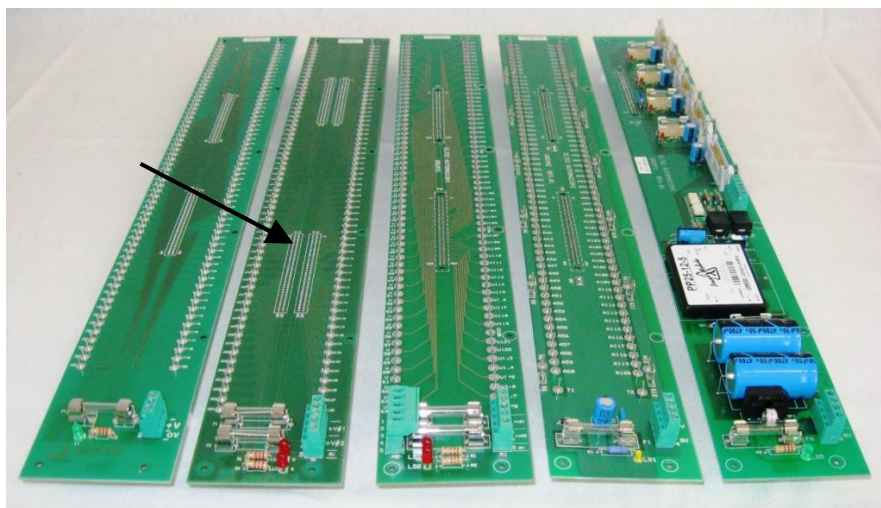
- Outputs voltage: $12 \div 24$ V
- Maximum continuative current each output: 2 A
- Maximum continuative current each card: 16 A
- Outputs with power MOS protected against short circuits
- Optoisolated outputs
- Internal Power Supply (through the flat cables)

The U64 module includes:	(reference to the price-list)
N. 1 Output board U64A	
N. 1 Back panel board/flat connection (Code ORGFO)	
N. ½ 128 outputs connection strip (Code ORGMUE)	
N. 2 Flat cables 64 conductors ORGFO/ORGMUE connection L=2 m (master) L=1,5 m(slave)	

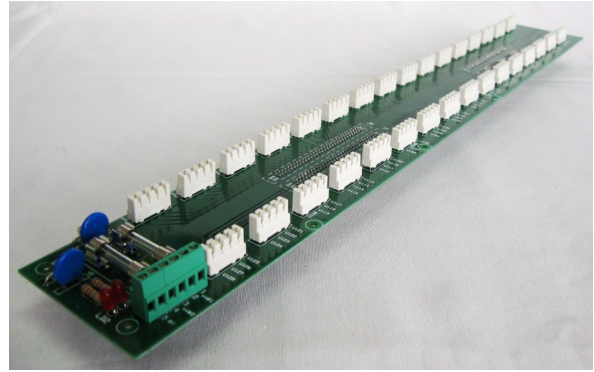
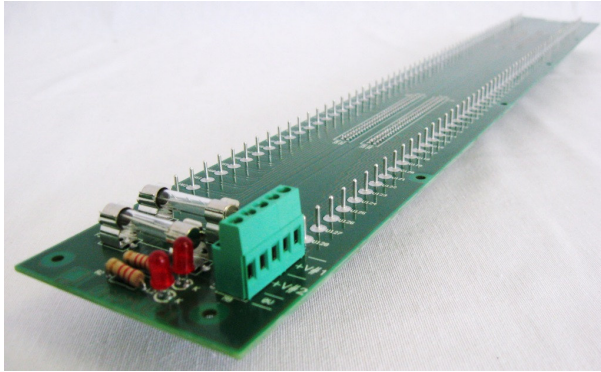
The U32 module includes:	(reference to the price-list)
N. 1 Output board U32A	
N. 1 Back panel board/flat connection (Code ORGFO)	
N. ½ 128 outputs connection strip (Code ORGMUE)	
N. 1 Flat cable 64 conductors ORGFO/ORGMUE connection L=2 m (master) L=1,5 m (slave)	

The U64N module includes:	(reference to the price-list)
N. 1 Output card U64N	
N. 1 Back panel card/flat connection (Code ORGFO)	
N. ½ 128 outputs connection strip (Code ORGMUE)	
N. 2 Flat cables 64 conductors ORGFO/ORGMUE connection L=2 m (master) L=1,5 m (slave)	

OUTPUTS CONNECTION STRIP (Code ORGMUE, ORGMUEK, ORGMUEP)



- 1 strip connects 128 outputs (2 outputs cards U64)
- External connection: solder pin (on demand: Krone connectors)
- Unit connection: connectors for flat cable 64 conductors
- Protection fuse sectioned for 64 outputs



7.4 - TRANSISTOR OUTPUT MODULE

A new output board is available:

I128T - board with 128 POSITIVE outputs

This board handles 128 outputs and it is seen by the CPU board of the unit as the equivalent of n° 2 boards.

It has been studied to replace the CAPTURE MODULE with the unit MB24N.

Advantages:

- Reduction in costs
- Reduction in space

Disadvantages:

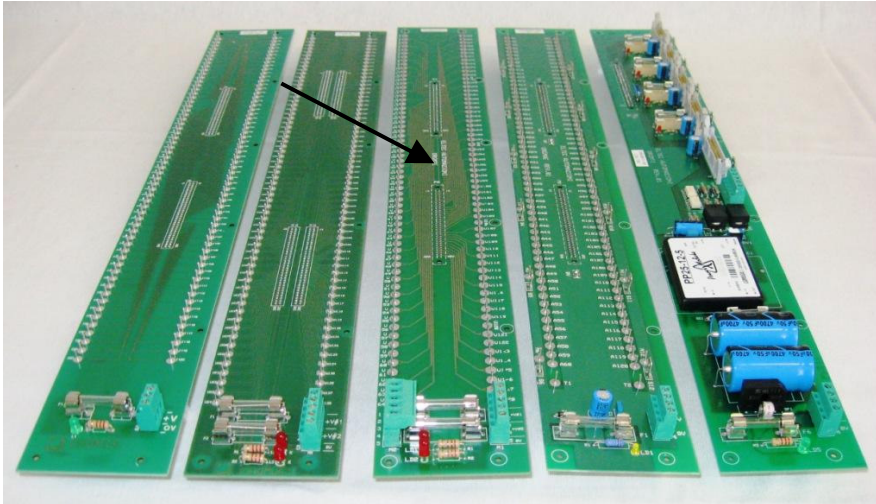
- No protection against short circuits (if during the testing phase there is a short circuit on one or more outputs it is necessary to replace the transistor).
- Maximum continuative current each output: 0,5 A.
- External power supply: it is necessary to bring the power supply to the cards through a terminal strip in the front of the board (the front panel of the rack is cut at the terminals strip).

SPECIFICATIONS:

- Outputs voltage: 12 ÷ 24 V
- Maximum continuative current each output: 0,5 A
- Maximum continuative current each card: 32 A
- Optoisolated outputs
- External power supply. 5 poles terminal strip on the front of the card
- Protection against damage of the flat cables with resettable fuse every 4 outputs. (When this fuse intervenes it is necessary to switch off the system, to wait some seconds the reset of the fuse and to restart the system)

The U128T module includes:	(reference to the price-list)
N. 1 Output board (Code U128T)	
N. 1 Back panel board/flat connection (Code ORGFO)	
N. 1 128 outputs connection strip (Code ORGMTE)	
N. 2 Flat cables 64 conductors ORGFO/ORMUE connection L=2 m (master) L=1,5 m (slave)	

CONNECTION STRIP OF THE TRANSISTOR OUTPUTS (Code ORGMTE)



- 1 strip connects 128 outputs (1 output board U128T)
- External connection: solder pin
- Unit connection: connectors for the flat cable 64 conductors
- Removable terminal strip to bring the power in the front of the U128T card
- Protection fuse sectioned for 64 outputs

7.5 - PROPORTIONAL OUTPUT MODULE

Board for the control of PROPORTIONAL MAGNETS.

U120P - Board with 120 PROPORTIONAL outputs

SPECIFICATIONS:

- Standard format, such as the input and output boards
- Analog outputs 0-5 V
- 8 bit digital/analog serial converters
- Optoisolated board and protected against short circuits and wrong connections

The board provides the 0-5 V output signal.

0 V – key at rest – closed valve
5 V – pressed key – opened valve

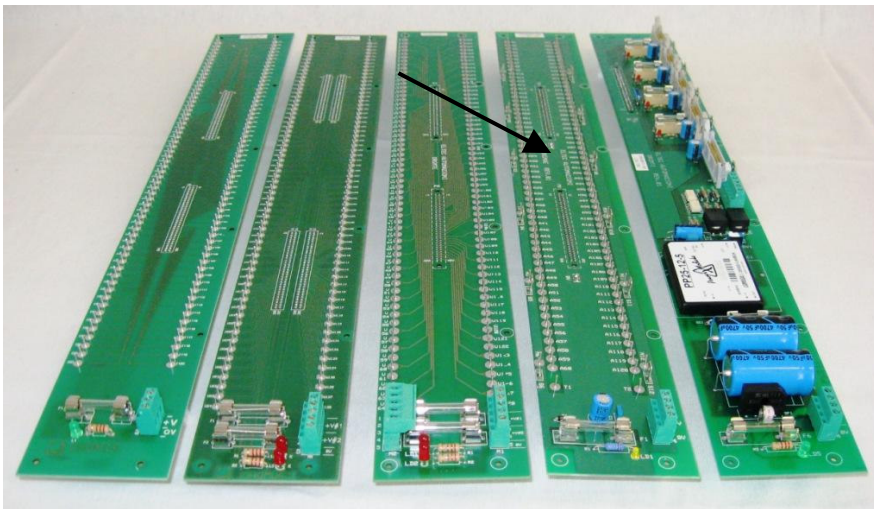
With the same analogical output it is possible to make the learning operation. This operation is carried out by the MAGNET CONTROL BOARD under the supervision of the CPU of the output board.

The U120P module includes:

(reference to the price-list)

- N. 1 Proportional output board (Code U120P)
- N. 1 Back panel board/flat connection (Code ORGFOP)
- N. 1 120 proportional outputs connection strip (Code ORGMAE)
- N. 2 Shielded round flat cable 64 conductors ORGFOP/ORGMAE connection L = 1,5 m

CONNECTION STRIPS OF THE PROPORTIONAL OUTPUTS (Code ORGMAE)



- 1 strip connects 120 proportional outputs (1 output card U120P)
- External connection: solder pin with faston mass for shielded cables (1 each 10 pin)
- Unit connection: connectors DIN for shielded cables 64 conductors
- Fuse of protection
- Current of 100 mA each board U120P
- Power supply of the external part of the proportional board supplied with its own power supply.

7.6 - KEYBOARD MODULE WITH HALL SENSORS

With the ORGDRIVE system it is possible to use the STATICS KEYBOARDS WITH HALL SENSORS.

These keyboards, essential for the proportional transmission systems, can be used also on on-off transmission system.

Proposed as an alternative to the traditional contacts keyboards (where the attack and release point is fixed, adjustable in a mechanical way working on the contact of each key), the static keyboards with hall sensors allow to have an analog signal that change according to the stroke of the key .

It is therefore possible to adjust electronically some parameters: offset key, useful stroke, attack point / release point (with fixed attack / release) attack point / hysteresis value (with variable attack / release).

These adjustments are made in a simple and intuitive way, by the use of the ORGDRIVE CONFIGURATION PROGRAMME and, in some cases, of the DISPLAY READOUTS. All the adjustments can be made independently for each keyboard.

As for the hardware it is necessary to mount on the keys a screw with a magnet at the top, and to install (above or below the keyboard) a SENSORS BOARD (Code HALTA) connected with a 20 conductors flat cable to the KEYBOARDS CONNECTIONS STRIP (Code ORGMTI). This strip is connected through a 64 conductors flat cable to the KEYBOARDS ACQUISITION BOARD (Code I8T) installed in the master unit in console.

It is possible to mount the static keyboards in all circumstances: on keyboards with lever of first or second kind (with pivot point at the end or at the middle of the key), upon or below the keyboards.

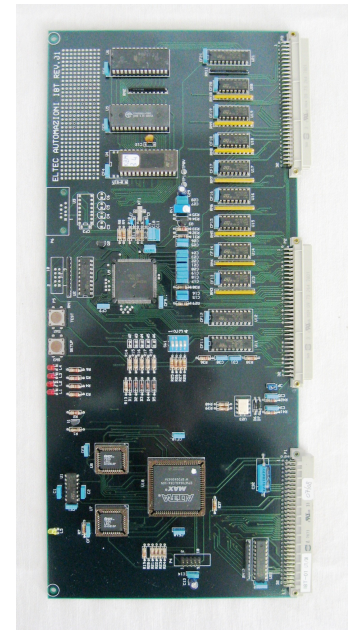
The use of the static keyboards with hall sensors is rising. There are many advantages compared to the use of traditional contacts keyboards.

Advantages:

- Static system without any problems of oxidation of the contacts (very frequent in damp places or with the presence of the saltiness in the air).
- Easiness to installation and simplicity of wiring (it is no longer necessary to connect all the wires from the contacts of the keys to the input strips, but only a small 20 conductors shielded flat cable for each keyboard).
- Possibility to regulate the key offset.
- Possibility to regulate the useful stroke of the key.
- Possibility to regulate the attack and release point (in a fixed way).
- Possibility to regulate the attack and release point (in a variable way).
- Independent adjustments for each keyboard.
- Learning from the microprocessor of all signals of the sensors and automatic adjustment without the need for calibration.
- Use of the display readouts (installed on the console) to verify the working of each key.
- Possibility to connect the display readouts on the ORGMTI strip for an automatic or manual diagnosis of the signals of all sensors (very useful for the installation and regulation phase of sensors board).

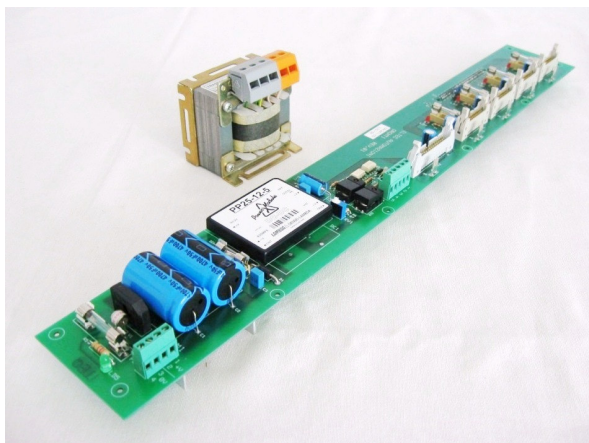
ACQUISITION KEYBOARD BOARD (Code I8T)

- 16 bit Motorola microprocessor type HC16 with RAM and EPROM , EEPROM.
- It acquires the data of 8 keyboards (max 61 keys).
- It does the operation of learning: for each key it memorizes the two extreme positions (key at rest, key pressed).
- With the setting of a dip-switch, at the starting it executes a self-learning of the position of the key at rest.
- It is connected to the ORGMTI strips with two shielded flat cables 64 conductors. The first flat connects the first 4 keyboards to the first ORGMTI strip, the second flat connects the other 4 keyboards to a second ORGMTI strip.
- All the keyboards, (included the pedal although it is provided with contacts), have to enter on this board in an analog mode.
- Signals through four led that are visible on the front of the board.
- Setting through a 4 positions dip-switch.



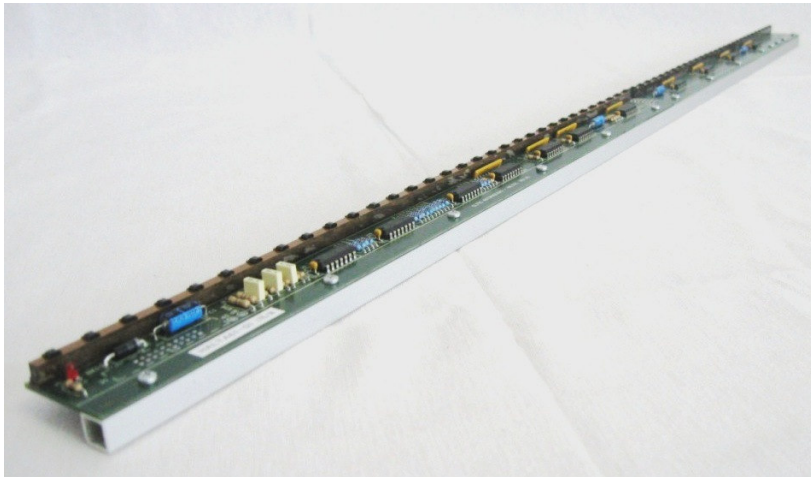
CONNECTION STRIP FOR KEYBOARDS (Code ORGMTI)

- Strip with the same dimensions of the ORGMIE and ORGMUE strips (550 x 75 mm).
- It connects 4 keyboards (to connect 8 keyboards it is necessary to mount 2 strips).
- It provides the power supply to the sensors of the HALTA board with an independent power supply galvanically isolated.
- Led signals of the power supplies of each keyboard.
- It has a 30 conductors connector to connect the display readouts (sometime the same that is installed on the console). With it it is possible to activate the functions of test and check of all sensors. Through the SETUP button it is possible to active the LEARNING function.
- It has an input (for an external button) and an isolated output (for a led) to bring the SETUP button (LEARNING function) on the console.
- Power supply required for the strip: a 12 VAC transformer is supplied.



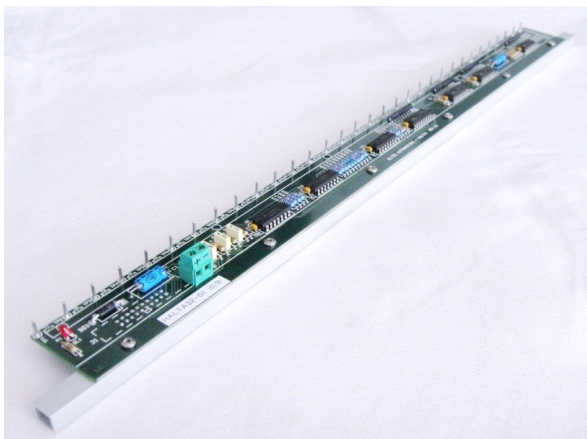
HALL SENSORS BOARD (Code HALTA61-58-56-54)

- Board on which there are the Hall effect sensors. The sensor produces a signal that changes with the position of the key.
- It can be mount in two positions:
Upon the key: the magnet is far from the sensor and come close to it pressing a key.
Under the key: the magnet is near the sensor and leaves it pressing a key.
(We suggest the assembly so that the adjustment of the screw with the magnet is done from the top of the keyboard).
- The board must be rigidly fixed to the structure of the keyboard.
- Mounted on a aluminium profile.
- Number of keys: 61, 58, 56, 54.
- **Step: 13,75 mm.**
(Adaptability to bigger steps up to 13,83 mm and to smaller steps up to 13,66 mm).
- Width of the board: 35 mm.
- Absorption: about 700 mA each keyboard (4 keyboards: 2,8 A).
- Connection with a shielded flat cable 20 conductors to the connection strip ORGMTI.
- It is not necessary any mechanical calibration (it is directly the microprocessor of the ACQUISITION KEYBOARD board (I8T) that do the LEARNING function).



PEDAL HALL SENSORS BOARD (Code HALTA32)

- Strip for the connection of the sensors of the HALP levers.
- It has a power supply terminal to supply all the sensors of the HALP levers.
- Number of keys: max 32.

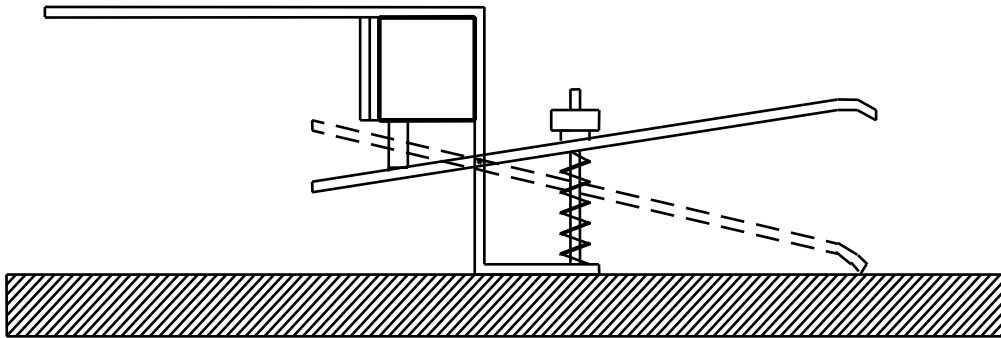


PEDAL CONTACTS BOARD (Code HALTAC32)

- Strip for the connection of the contacts of the pedal.
- The contact of the pedal must be a clean contact, not supplied (as a contact of a mechanical push button).
- With the software KBM 3.2 version and following ones (June 2004) the common of the contacts is always connected to the terminal C2 (0V).

PEDAL HALL SENSOR LEVER (Code THP)

- It uses the same hall sensor mounted on the HALTA boards.
- Maximum stroke: 28 mm.
- Minimal stroke: 16 mm.
- 3 poles connector (to solder) for: power supply (0V,+5V), signal.



MODULE 4TS - Base part to control up to 4 keyboards (including the pedal).

MODULE 8TS - Base part to control up to 8 keyboards (including the pedal).

In the composition of the code of the ORGDRIVE unit it will have to insert, together with the base module and the input and output modules, also the module of the static keyboards according to one's own needs. (4TS or 8TS).

The module 4TS includes:	(reference to the price-list)
N. 1 Acquisition keyboards board (Code I8T)	
N. 1 Back panel connection board/flat (Code ORGFIP)	
N. 1 Connection strip for keyboards (Code ORGMTI)	
N. 1 Shielded round flat cable L = 1,5 m (Code 5010-150)	
N. 1 Sensors power supply transformer 25 VA (Code TRHALL25)	

The module 8TS includes:	(reference to the price-list)
N. 1 Acquisition keyboards board (Code I8T)	
N. 1 Back panel connection card/flat (Code ORGFIP)	
N. 2 Connection strip for keyboards (Code ORGMTI)	
N. 2 Shielded round flat cable L = 1,5 m (Code 5010-150)	
N. 1 Sensors power supply transformer 50 VA (Code TRHALL50)	

The following modules have to be ordered separately:

TH61 - TH58 - TH56 - TH54 - hall sensor board for keyboards

TH32 - pedal hall sensors board

TC32 - pedal contacts board

THP - pedal hall sensors lever

The module TH61 - TH58 - TH56 - TH54 includes:	(reference to the price list)
N. 1 Hall sensors board - adapted to the numbers of the keys (Code HALTA61-58-56-54)	
N. 61 Screws with magnet (5 x 25 mm)	
N. 1 Shielded round flat cable 20 conductors L = 1,5 m (Code 5009)	

The module TH32 includes:	(reference to the price list)
N. 1 Pedal hall sensors board (Code HALTA32)	
N. 1 Shielded round flat cable 20 conductors L = 1,5 m (Code 5009)	

The module TC32 includes:	(reference to the price list)
N. 1 Pedal contacts board (Code HALTAC32)	
N. 1 Shielded round flat cable 20 conductors L = 1,5 m (Code 5009)	

The module THP includes:	(reference to the price list)
N. 1 Pedal hall sensor lever (Code THP)	

8- PROPORTIONAL MAGNET (Code MAPR)

“Intelligent” magnet that follows the movement of the key as closely as possible, enabling a gradual opening of the pallet.

WORKING:

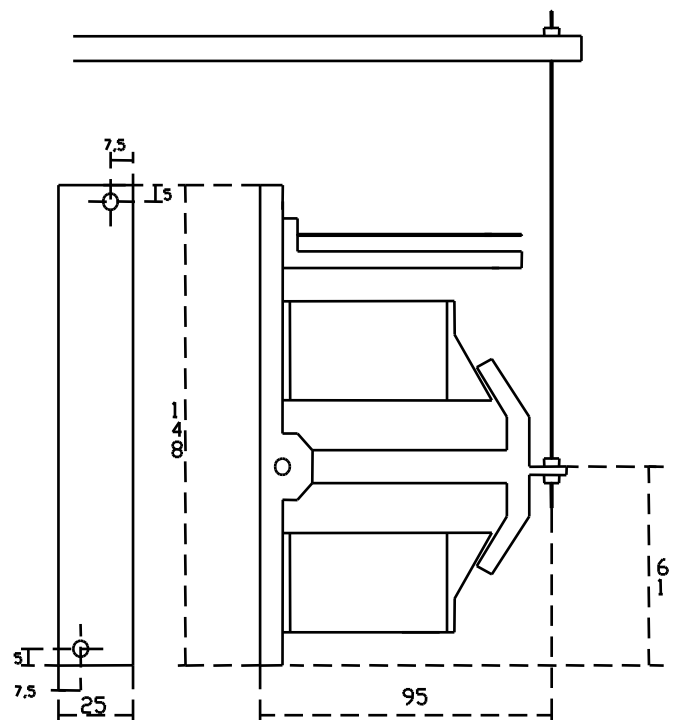
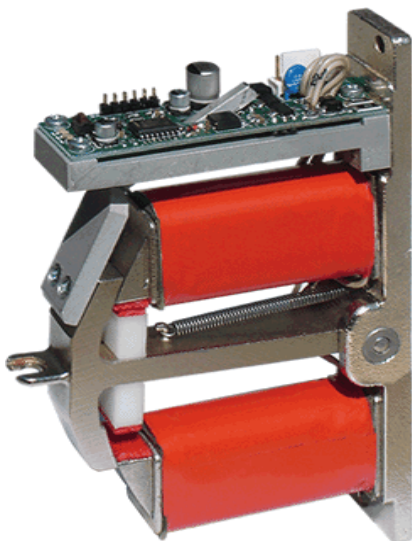
The unit in the console (master) reads the position of the pressed keys and send the resulting data to the unit in the organ (slave). The slave unit processes these data and, by means of proportional outputs boards, gives to every magnet the position in which it has to go. The microprocessor of the control board of the magnet reads, thousandths time of a second, both the position of the anchor of the magnet and the final position to reach (position that is directly proportional to that of the key) and constantly corrects the current values of the two coils in order to bring or hold the anchor in this position (working with loop closed).

After the installation it is enough to activate the “SELF-LEARNING” procedure of proportional magnets. It enables all the magnet (10 at a time), memorizing their closet and fully-open position. The microprocessor carries out this operation automatically and stores the data in its permanent memory.

After that, in order to compensate for any mechanical imperfection or temperature-related movements, the SELF-LEARNING procedure can easily be repeated using the command available on the console.

SPECIFICATIONS:

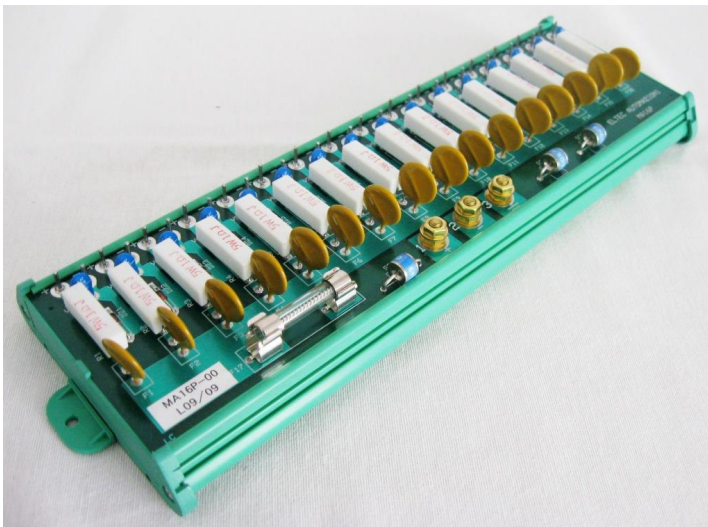
- Power supply of the magnet: 28 V
- Stroke: 8 mm
- Return number: 20/sec
- Traction/contrast power: 1,5 Kg
- Weight: 790 g
- CE certification
- PATENTED



8.1 - CARD FOR THE PROTECTION AND DISTRIBUTION OF THE POWER SUPPLY (Code MA16P)

This card, directly installed on the windchest, is used for the protection against electrostatic discharges and for the distribution of the power supplies of the proportional magnets. It is provided with gas arresters, varistors, zener diodes and fuses.

It is suggested to protect also the power supply line of the organ with appropriate gas arresters (ELTEC can supply some information about the gas arresters to use).



SPECIFICATIONS:

- Each card protects and supply 16 proportional magnets.
- Board case with fixing tabs
- Dimensions: 250 x 72 mm

8.2 - EXIHIBITION WINDCHEST

To appreciate the working of the proportional magnet and the control of the pallets at their best, ELTEC automazioni has a complete windchest in its laboratory to demonstrate the system with magnets and pallets at sight (Principal 4' – 61 notes).

The manual and the windchest are in close proximity allowing a visual test between the action of the key and the opening of the pallet. This is impossible on an organ with the keyboard far from the windchest.



9 - TEST AND DIAGNOSTIC FUNCTIONS

ORGDRIVE system has two diagnosis ways:

AUTOMATIC DIAGNOSIS (on line) IT IS ALWAYS CARRIED AT THE STARTING OF THE SYSTEM:

Automatic test of the RAM, EEPROM, CONFIGURATION of the cards I/O, SERIAL for communication of MASTER - SLAVE.

MANUAL DIGNOSIS (not on line) IT IS CARRIED OUT ON DEMAND AT THE STARTING OF THE SYSTEM:

Test INPUT, OUTPUT, TIMER, SLIDER, PROPORTIONAL MANUALS and SERIAL LINE for the verification of the communication of MASTER - SLAVE.

It is possible to activate and visualize these functions through the DISPLAY readouts (AGDISP16, AGDISP25, DG25, DGTouch, depending on the cases).

It is therefore possible to verify all the hardware of the system. During the installation phase this is very useful to verify the rightness of the connections and to identify any anomalies quickly.

MANUAL DIAGNOSIS

The available manual diagnosis functions are:

- ✓ With the DISPLAY readouts (or the control panel DG25) directly connected to ORGDRIVE system
 - [A 1.] INPUTSTEST
 - [A 2.] OUTPUTS TEST
 - [A 3.] SLAVE LINE TEST
 - [A 4.] TIMER VALUE
 - [A 5.] TIMER SETUP
 - [A 6.] SLIDER TEST/SET
 - [A 7.] ANALOG KEYBOARD TEST
 - [A 8.] ANALOG KEYBOARD LEVELS

- ✓ With the DISPLAY readouts connected on the ORGMTI strip of the proportional manual:
 - [A 1.] MINIMUM LIMIT OF KEYBOARDS
 - [A 2.] MAXIMUM LIMIT OF KEYBOARDS
 - [A 3.] MINIMUM LIMIT OF KEYS RANGE (SPAN)
 - [A 4.] VISUALISATION OF THE ANALOG VALUE OF EACH KEY
 - [A 5.] VISUALISATION OF THE NUMBER OF KEYS OF EACH MANUAL
 - [A 6.] SET UP AND VISUALISATION OF THE OFFSET OF EACH MANUAL

10 - CAPTURES

The word CAPTURES identifies a memory system that allows to memorize and then recall a large number of combinations of stops, called CAPTURES COMBINATIONS.

This allows the organist, during the performance, to modify very quickly the timbre of the organ.

Moreover, in addition to the STOPS, in each capture combination it is possible to memorize:

- PEDAL DIVISION (always memorized)
Memorization of the division point and of the function (active / no active)
- STORED COMMANDS (always memorized)
Controls that allow to memorize in the captures all the functions that are programming with Orgdrive that provide for the use of a button (example: Sustain, Soprano, Manuals exchange control, Crescendo enable, etc.).
- VARIABLE STRUCTURE (with button to activate or not the memorization).
Memorization of the value that has been set on the selectors used to configure the structure of the organ.
- MAGNET CONTROL (with button to activate or not the memorization).
Memorization of the value on the that has been set on the selectors.

The controls used by the ORGDRIVE system in the management of the CAPTURES are:

SET:	It allows to memorize the captures combinations
CANCEL:	It allows to cancel the captures combinations
INCREASE (+):	It allows to access in a sequential way to the captures combinations.
DECREASE (-):	It allows to access in a sequential way to the captures combinations.
PISTONS:	They allow to access to a capture combination in a direct way. They are button controls, with output for the lamp. The number of pistons can be programmed by the Orgdrive configuration programme (max 32).
INSERT:	It allows to inserts a capture combination between two combinations already existing, moving up the combinations that follow the point of insertion. (Only for GENERAL CAPTURES)
DELETE:	It allows to delete a capture combination moving down the combinations that follow the one deleted. (Only for GENERAL CAPTURES)

The CAPTURES COMBINATIONS are identified by the interpolation of two numbers:

- Number of Level (max 999)
- Number of Pistons (max 32)

According to the type of **CAPTURE CONTROL** selected with the Orgdrive configuration programme we will have:

Capture control STANDARD - N combinations for each LEVEL,
where N correspond to the number of PISTONS

Capture control BY LEVEL - N combinations for each PISTON,
where N correspond to the number of LEVELS

The visualisation is done by a CONTROL PANEL or a CAPTURE DISPLAY; it is different according to the different models that are available.

The number of LEVEL is handled by the keys + and – (and in some cases a numerical keyboard) that are present on the captures display or on the control panel.

There are 3 modes of increase and decrease of the levels, that correspond to three speeds:

MODE 1: To go on and go back slowly (1 level each time)

MODE 2: With auto-repeat to go on and go back quickly (10 levels each time)

MODE 3: With auto-repeat to go on and go back quickly (100 levels each time)

This makes each memory level quickly accessible.

10.1 - GENERAL CAPTURES PARTICULAR CAPTURES

The ORGDRIVE system handles two types of CAPTURES memories:

- GENERAL CAPTURES
- PARTICULAR CAPTURES

GENERAL CAPTURES

The GENERAL CAPTURES handle all the stop of the console.
For them to apply the instructions above.

PARTICULAR CAPTURES

The PARTICULAR CAPTURES handle only a part of stops of the console, usually linked to a single keyboard.

For them to apply the instructions above, with the following variations:

- Only STOPS are memorized.
- It is not possible to INSERT or DELETE a combination.
- The maximum number of PARTICULAR PISTONS is 8 and it must be the same for each GROUP.
- The maximum number of PARTICULAR PISTONS GROUPS is 8, one for each keyboard.

Moreover, the LEVELS of the particular captures can be:

- AS GENERAL LEVELS: they use the same levels of the general captures and so the same DISPLAY for the visualisation.
- AS INDEPENDENT LEVELS: linked to a selector or to some buttons.

10.2 - EXCITATION TIME OF THE MAGNETS

To use the CAPTURES function it is necessary to install, for the stops in console, some stop keys with ON-OFF MAGNET.

Through the use of the Orgdrive configuration programme it is possible to programme the EXCITATION TIME OF THE ON-OFF MAGNETS.

This function is very useful for adapting the Orgdrive system to every kind of stop key and drawstop used.

The standard EXCITATION TIME is 225 msec (value 0).

It is possible to vary this time (with changes of 25 msec each) from 25 msec (value -12) to 625 msec (value +12).

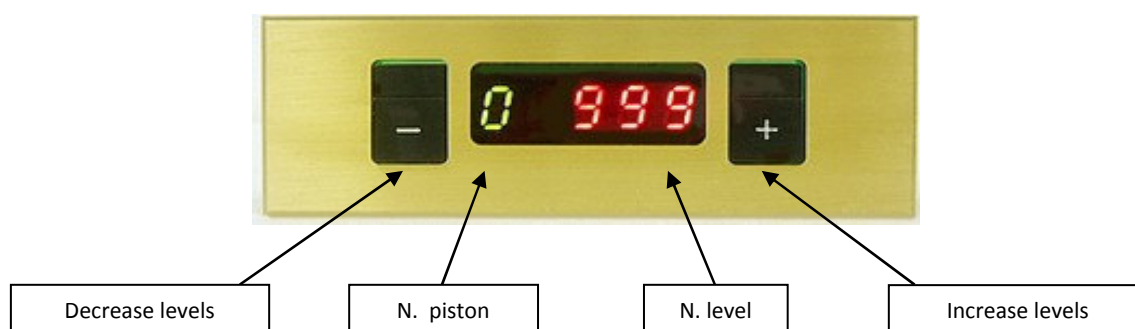
The default value that has been set is 325 msec (value - 4).

11 - ACCESSORIES OF THE SYSTEM

11.1 - DISPLAY READOUTS (Code AGDISP16)

Display for the visualization of the captures.

With this display it is possible to visualize up to a maximum of 32 pistons per 999 levels. The maximum number of levels is programming through the ORGDRIVE configuration programme and it depends on the number of stops and on the number of captures pistons.



SPECIFICATIONS:

- Maximum number of pistons: 32
- Maximum number of levels: 999
- Five-digit displays: 2 green (for pistons), 3 red (for levels)
- Buttons + and – for increase and decrease of the levels, with three speeds.
- Painted brass plate
- Dimensions: 109 x 36 x 80 mm

The AGDISP16 module includes:	(reference to the price-list)
N. 1 Display board with brass plate (Code AGDISP16)	
N. 1 Shielded round flat cable 30 vie L = 2,5 m (Code 5011)	

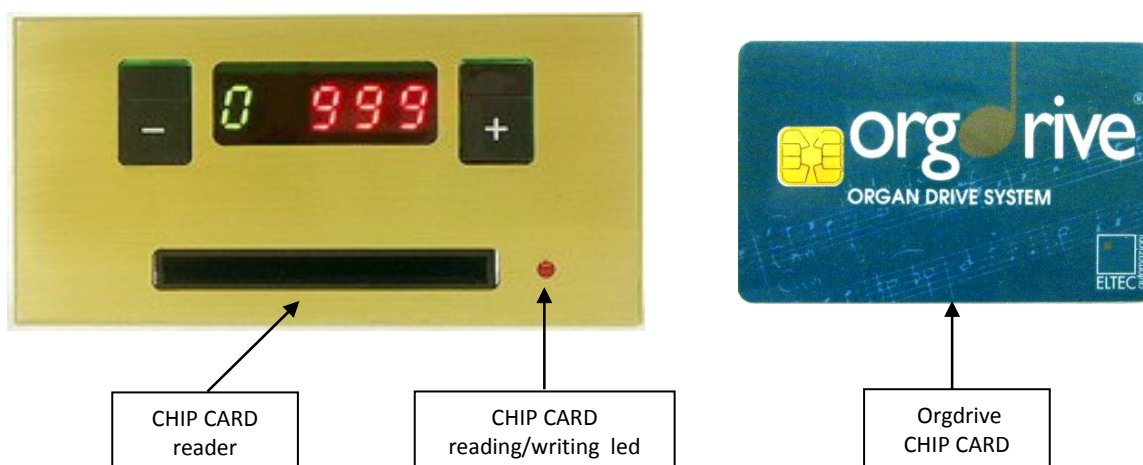
11.2 - DISPLAY READOUTS WITH CHIP CARD (Code AGDISP16-CARD)

Display for the visualisation of the captures with CHIP CARD.

This function allows to memorize a sequence of captures combinations on a CHIP CARD and to read it later. Controls that are used for these operations correspond to the controls of the general captures (set, cancel, captures pistons).

With this display it is possible to visualize up to a maximum of 32 pistons per 999 levels.

The maximum number of levels is programming through the ORGDRIVE configuration programme and it depends on the number of stops and from the number of captures pistons.



SPECIFICATIONS:

- Maximum number of pistons: 32
- Maximum number of levels: 999
- Five-digit displays: 2 green (for pistons), 3 red (for levels)
- Buttons + and – for increase and decrease of the levels, with three speeds
- CHIP CARD reader
- Signalling led for reading / writing CARD
- Painted brass plate
- Dimensions: 109 x 55 x 80 mm

The AGDISP16-CARD module includes:		(reference to the price-list)
N. 1	Display card with brass plate and chip card reader (Code AGDISP16-CARD)	
N. 3	Orgdrive chip card (Code CHIP CARD)	
N. 1	Shielded round flat cable 30 vie L = 2,5 m (Code 5011)	

11.3 - DISPLAY READOUTS WITH NUMERICAL KEYBOARD (Code AGDISP25)

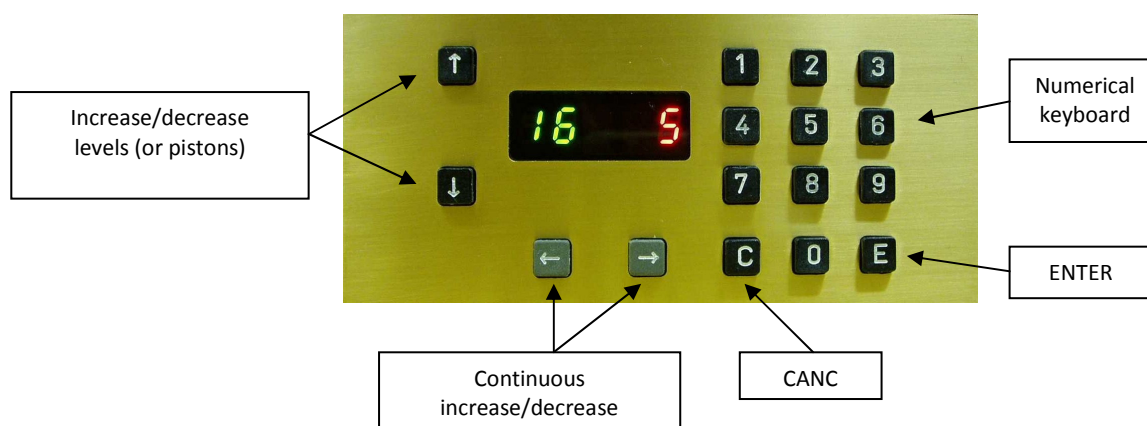
Display for the visualisation of the captures. Two models are available:

- With numerical keyboard (Code AGDISP25 - A)
- With numerical keyboard and complete controls (Code AGDISP25 - B)

With this display it is possible to visualize up to a maximum of 32 pistons per 999 levels. The maximum number of levels is programming through the ORGDRIVE configuration programme and it depends on the number of stops and from the number of captures pistons.

Model A (Code AGDISP25-A)

Display for the visualisation of the captures with numerical keyboard for direct access to the level. This function allows to enter directly into the desired level typing in its number.



SPECIFICATIONS:

- Maximum number of pistons: 32
- Maximum number of levels: 999
- 5 digits display: 2 green (for pistons), 3 red (for levels)
- Push buttons ↑ and ↓ for the increase and decrease of the levels (or pistons)
- Push buttons ← and → for the continuous increase and decrease
- Numerical keyboard for the direct access to the level
- Painted brass plate
- Dimensions: 143 x 66 x 80 mm

The AGDISP25-A module includes:	(reference to the price-list)
N. 1 Display card with brass plate (Code AGDISP25-A)	
N. 1 Shielded round flat cable 30 vie L = 2,5 m (Code 5011)	

Model B (Code AGDISP25-B)

Display for the visualization of the captures with numerical keyboard for direct access to the level and complete controls.

This function allows to manage in a complete way the captures, using the controls SET, CANCEL, CONTINUOUS INCREASE AND DECREASE that are present on the display.



It is always possible to install on the console and connect, through the input boards, the pistons (1-32) and the controls SET and CANCEL, CONTINUOUS INCREASE and DECREASE.

If they are connected they work in parallel.

SPECIFICATIONS:

- Maximum n. of pistons: 32
- Maximum n. of levels: 999
- 5 digits display: 2 green (for the pistons), 3 red (for the levels)
- Push buttons + and – increase and decrease of the levels
- Push buttons ↑ and ↓ for the increase and decrease of the levels (or pistons)
- Push buttons ← and → for the continuous increase and decrease
- Push buttons SET and CANCEL
- Numerical keyboard for the direct access to the level
- Painted brass plate
- Dimensions: 168,5 x 66 x 80 mm

The AGDISP25-B module includes:	(reference to the price-list)
N. 1 Display card with brass plate (Code AGDISP25-B)	
N. 1 Shielded round flat cable 30 vie L = 2,5 m (Code 5011)	

11.4 - DISPLAY READOUTS WITH NUMERICAL KEYBOARD AND CHIP CARD (Code AGDISP25-CARD)

Display for the visualisation of the captures with CHIP CARD.

This function allows to memorize a sequence of captures combinations on a CHIP CARD and to read it later. Controls that are used for these operations correspond to the controls of the general captures (set, cancel, captures pistons).

Two models are available:

- With numerical keyboard (Code AGDISP25 A - CARD)
- With numerical keyboard and complete controls (Code AGDISP25 B - CARD)

With this display it is possible to visualize up to a maximum of 32 pistons per 999 levels.

The maximum number of levels is programming through the ORGDRIVE configuration programme and it depends on the number of stops and from the number of captures pistons.



Mod. AGDISP25A - CARD



Mod. AGDISP25B - CARD

SPECIFICATIONS :

- (See model AGSISP25 - A)
- CHIP CARD reader
- Signalling led for reading / writing CARD
- Dimensions: 143 x 84 x 80 mm

SPECIFICATIONS:

- (See model AGSISP25 - B)
- CHIP CARD reader
- Signalling led for reading / writing CARD
- Dimensions: 168,5 x 84 x 80 mm

The AGDISP25A-CARD module includes:	(reference to the price-list)
N.1 Display card with brass plate and chip-card reader (Code AGDISP25A-CARD)	
N.3 Orgdrive chip card (Code CHIP CARD)	
N.1 Shielded round flat cable 30 vie L = 2,5 m (Code 5011)	

The AGDISP25B-CARD module includes:	(reference to the price-list)
N.1 Display card with brass plate and chip-card reader (Code AGDISP25B-CARD)	
N.3 Orgdrive chip card (Code CHIP CARD)	
N.1 Shielded round flat cable 30 vie L = 2,5 m (Code 5011)	

11.5 - PROGRAMMABLE CRESCENDO BY THE ORGANIST (Code CP)

This function allows the organist to programme three different CRESCENDO, different from the STANDARD one (programmed by the organ builder and not modifiable).

For the organist it is therefore possible to create more types of crescendo, suited to the music performed or simply more consistent with one's own musical taste.

The three programmed CRESCENDO can be quickly selected, deleted and modified at any moment.

To select the desired crescendo it is necessary to install on the console a plate with 4 buttons with an incorporated led (Code CP) connected to the digital readouts through a flat cable 10 conductors.

The programming happens with the help of this plate, of the display readouts and the SET and CANCEL buttons.

Note: To enable the programmable crescendo it is not necessary to intervene in any way on the configuration programme made with the Orgdrive software.

Note: If you use the DG25 or the DGTouch control panel it is not necessary to install the CP plate because the function of PROGRAMMABLE CRESCENDO is directly enabled by the control panel.



SPECIFICATIONS:

- N. 4 buttons with led
- Painted brass plate
- Dimensions: 109 x 34 x 20 mm

The CP module includes:

(reference to the price-list)

N. 1 Programmable crescendo card with brass plate (Code AGCRES)

N. 1 Flat cable 10 conductors L = 1 m (Code 5008)

11.6 - KEY SELECTOR FOR THE BLOCK OF THE LEVELS CAPTURES (Code DAKEY)

This function allows to lock, with a key selector, the levels of the captures.

The locked levels (indicated by the lighted red led on the button of the plate) are accessible, but they can't be written any more.

In this way the organist can protect their own captures combinations, avoiding that another user of the organ could overwrite them.

To activate the function it is necessary to install on the console a plate with a key selector and a button with a led inside (Code DAKEY) connected to the captures display by 4 wires. With the turned key, an impulse locks the level and the led switches on; a second impulse unlock the level and the led switch off. With only a manoeuvre it is also possible to unlock all the levels.



SPECIFICATIONS:

- N.1 button with led
- N.1 key selector
- Painted brass plate
- Dimensions: 72 x 36 x 40 mm

Note: To enable the block of the captures levels it is not necessary to intervene in any way on the configuration programme made with the Orgdrive software.

Note: If you use the DG25 or the DGTouch control panel it is not necessary to install the DAKEY plate because it provides an high level of protection than the block of the levels. With the DG25 it is therefore possible to divide the total memory area in several personalized memory areas (max 50), protected by a password.

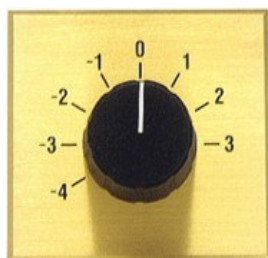
The DAKEY module includes:	(reference to the price-list)
N. 1 Board with key selector and brass plate (Code DAKEY)	
N. 2 Keys	

11.7 - TRANSPOSER SELECTOR (Code PTR)

Brass plate with a 8 positions selector to install in console for the transposer function (from -4 to +3 semitones).

The function has to be programmed through the Orgdrive configuration programme with switch inputs without the lamps.

The plate is connected to the input strip with eight wires (-4, -3, -2, -1, 0, +1, +2, +3).
The common of the selector has to be connected to the negative (0V) of the same strip.



SPECIFICATIONS:

- N.1 eight positions selector
- Painted brass painted plate
- Dimensions: 50 x 46 x 25 mm

Note: If you use the DG25 or the DGTouch control panel it is not necessary to install the PTR plate because the function of TRANSPOSER is directly enabled by the control panel

The PTR module includes:	(reference to the price-list)
N. 1 Rotary selector with brass plate	

11.8 - SLIDER FOR CRESCENDO AND EXPRESSIONS (Code SL16)

Rectilinear transducer of position used for transfer the position of the CRESCENDO and EXPRESSION pedal to the Orgdrive system.

The system has four analog inputs devote to the SLIDER, independent of the others inputs. They are used in this way:

- | | |
|---------------------------|---------------------------|
| 1 – SLIDER for crescendo | 3 – SLIDER for expression |
| 2 – SLIDER for expression | 4 – SLIDER for expression |

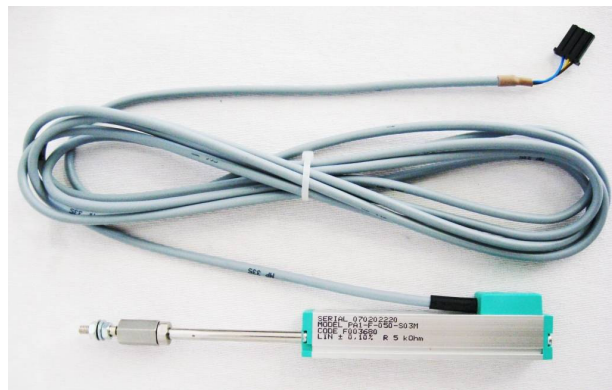
The use of the SLIDER offers a lot of advantages compared with the traditional counters:

- Static system and so without any oxidizable contacts.
- Possibility to programme: max 99 steps for CRESCENDO
max 127 steps for EXPRESSION
- Possibility to programme: max 32 outputs (each slider) for the signalling lamps (or led) in console
- Direct connection to the system with only a connector, without the need to weld any wire and without using any input.

The whole programming happens through the Orgdrive configuration programme.

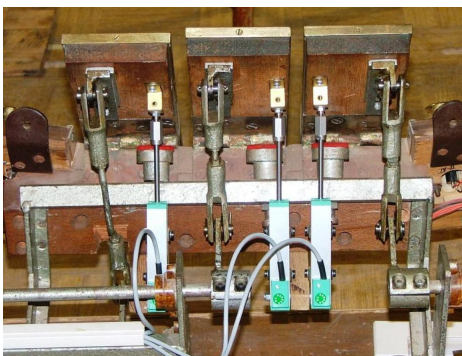
SPECIFICATIONS:

- Conductive plastic slider
- Stroke: 50 mm
- Linearity: 0,1%
- Resistance value: 5 KOhm
- Length of the cable: 3 m
- Cable with the connector connected directly to the system



Note: If you use the DG25 or the DGTouch control panel it is not necessary to programme the outputs for the signalling lamps because a sliding bar (for each slider) is visualized directly on the display of the control panel. However it is possible to use both solution at the same time.

Note: With the Orgdrive system it is always possible to use the traditional counters with contacts. It is enough to programme the function in an appropriate way through the Orgdrive configuration programme.



11.9 - LED BAR FOR CRESCENDO AND EXPRESSIONS (Code CR16, CRCON)

Plate for the visualizations of the state of the crescendo or expressions.
It has a bar with 30 led, available in three different colours: red, yellow, green.

The programming of the number of the outputs for the visualization of the state of the crescendo and the expression happens through the Orgdrive configuration programme. It is possible to programme up to a maximum of 32 outputs. Programming a number of outputs less than 30, it is necessary to connect the led together (example: programming 10 outputs it is necessary to connect 3 led together).

MODELS:

To connect on the outputs of the Orgdrive system:

CR16R	-	Red led bar	-	Positive input
CR16G	-	Yellow led bar	-	Positive input
CR16V	-	Green led bar	-	Positive input

To connect on the counter:

CRCON	-	Red led bar	-	Negative input
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SPECIFICATIONS:

- Number of led: 30
- Colour of the led: red, yellow, green
- Painted brass plate
- Dimensions: 121 x 30 x 50 mm



The CR16 / CRCON module includes:

(reference to the price-list)

- | |
|---|
| N. 1 Board with led bar and brass plate (Code CR16 / CRCON) |
| N. 1 Cable flat 34 conductors L = 2,5 m (Code 5017) |

Note: If you use the DG25 or the DGTouch control panel it is not necessary to use any led bar, because a sliding bar for each slider (or counter of the crescendo) is directly visualized on the display of the control panel. However it is possible to use both solution at the same time.

11.10 - VISUALIZATION OF THE POSITION OF THE CRESCENDO WITH A NUMERICAL DISPLAY

For the visualization of the crescendo, besides the traditional led bar, it is possible to use a 2 digits NUMERICAL DISPLAY. Through the configuration programme it is possible to programme the number of steps to visualize (00 - 99).

MODELS:

- CRDISP1 - Numerical visualization of the position of the crescendo
 CRDISP2 - Numerical visualization of the position of the crescendo with button for the activation

SPECIFICATIONS:

- Led colour: red
- Painted brass plate
- Dimensions: 85 x 36 x 80 mm



11.11 - PROPORTIONAL MAGNET CONTROL (Code ORGAVM)

With the PROPORTIONAL transmission system it is possible to control the OPENING OF THE PROPORTIONAL MAGNETS and therefore the consequent opening of the pallet. Reducing the opening of the magnet, we will have that, with the key completely down, the magnet will not be completely open.

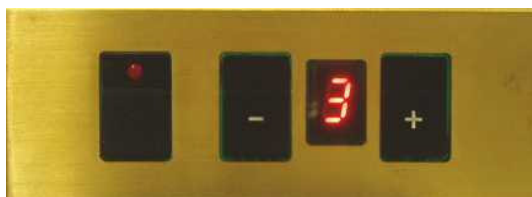
It is necessary to install a plate with a display and three buttons that are directly connected to the inputs and outputs of the system.

With the buttons + and - it is possible to select the level of opening of the magnet from 1 to 9 (9 = completely open).

The selected value is visualized on the display and it can be memorized in the captures using the light button of the plate. When the led is lighted the memorization is enabled.

SPECIFICATIONS:

- Painted brass plate
- Dimensions: 100 x 36 x 55 mm



11.12 - VARIABLE STRUCTURE SELECTOR

The function of VARIABLE STRUCTURE allows to associate, in a variable way, a specific sound group to a keyboard. To do this association it is necessary to use a VARIABLE STRUCTURE SELECTOR.

This selector uses the same board of the PROPORTIONAL MAGNET CONTROL but without the button for the memorization in the captures.

This button exists but it is directly connected to the inputs/outputs of the unit and it is only one for all the selectors. With it, it is possible to decide if memorizing or not the position of the VARIABLE STRUCTURE SELECTORS in the captures.

11.13 - CONTROL PANEL (Code DG25)

DG25 is an advanced control panel of the ORGDRIVE system that allows to handle a lot of functions:

- VISUALIZATION OF THE CAPTURES (max 32 pistons - 999 levels)
- DIVISION OF THE TOTAL MEMORY AREA IN PERSONALIZED MEMORY AREAS, PROTECTED BY PASSWORD (max 50)
- EXTERNAL BACKUP OF ONE OWN MEMORY AREA
- TRASPOSER
- PROGRAMMABLE CRESCENDO
- VISUALIZATION OF THE PROGRESSION BAR OF THE CRESCENDO
- VISUALIZATION OF THE PROGRESSION BAR OF THE EXPRESSIONS
- VISUALISATION OF THE HOUR
- INSERTION OF A COMBINATION
- DELETION OF A COMBINATION

The visualization happens through a graphic display and the selection of the function happens through some "function buttons" that are some buttons that change their function according to what the display shows.



The main innovations introduced by this control panel DG25 are two:

- 1) Compactness of the hardware.
- 2) Division of the memory area; protection with password and external backup.

1) COMPACTNESS OF THE HARDWARE

All the functions above mentioned are controlled and/or visualized directly by the control panel. It is not necessary to use a specific plate for each function any more.

Therefore the DG25 control panel integrates and replaces, with a single plate:

- Plate for the captures display
- Plate for the transposer
- Plate for programmable crescendo
- Plate led bar for crescendo
- Plate led bar for expressions (max 3)
- INSERT / DELETE buttons

2) DIVISION OF THE MEMORY AREA; PROTECTION WITH PASSWORD AND EXTERNAL BACKUP

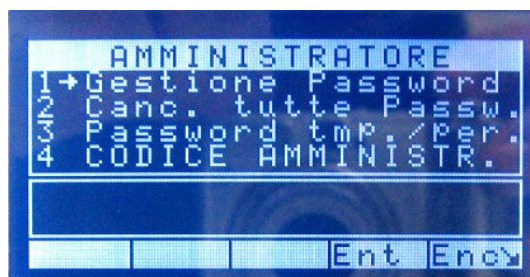
The most important novelty introduced by the DG25 control panel is the possibility to divide the total memory area in most personalized memory areas (max 50), protected by a password. It is also provided for a not protected common memory area, accessible to all.

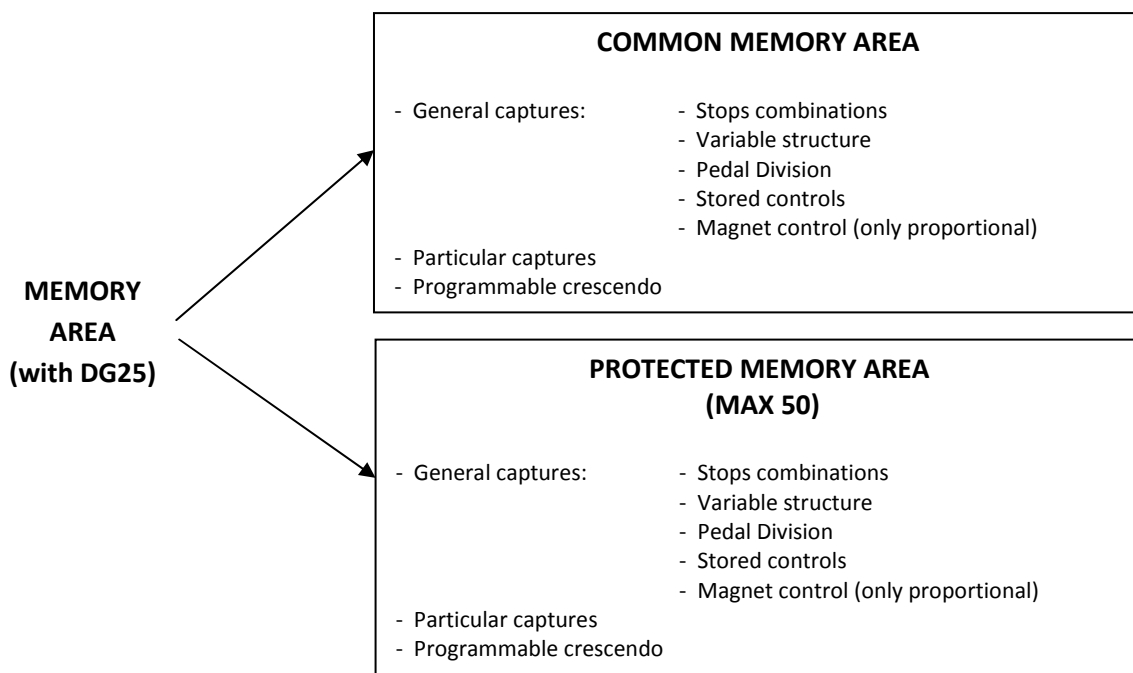
Each user (organist) can then access to it, after the entry of a password, to his protected memory area and memorize his captures combinations (and its crescendo) without the danger that they be modified or deleted by someone else.

A USB connector present in the DG25 allows also to do for each of these memory areas, a backup on a USB key memory (ELTEC format).

The connector used is a USB connector, but the key memory IS NOT COMPATIBLE with the USB standard protocol. Therefore:

- It is not possible to use common USB memories (flash drive) on sale, to do the backup of data from the DG25.
- It is not possible to use the KMEM key memory (supplied with the DG25) on a computer.





PROTECTED MEMORY AREA

The number of PASSWORD (and so the number of the protected memory areas) is set during the programming phase through the use of the ORGDRIVE CP25 configuration programme. The maximum number of PASSWORD allowed (and so the maximum number of the protected memory areas) is 50.

In addition to the protected memory areas it is always provided a common memory area, accessible to all without needing a password. This area is marked, on the display, by the following indication: *****

Each memory area is accessible exclusively to the organist holder of the PASSWORD. No one else can access, use and/or change his settings.

Each memory area, even if generically indicated as "memory of the captures", includes the personalized data of the following functions:

- General captures
 - Stops combinations
 - Variable structure
 - Pedal Division
 - Stored controls
 - Magnet control (only proportional)
- Particular captures
- Programmable crescendo

The capacity of each memory area (n° of possible levels) differs according to:

- Number of PASSWORD (protected memory area) programmed
- Number of captures combinations pistons
- Number of stop keys
- Number of selectors for the variable structure

The management of the PASSWORD is handled by an ADMINISTRATOR.

SPECIFICATIONS:

- LCD graphic display with led backlight
- Resolution: 160 x 80
- Visualisation area: 72,3 x 37,8 mm
- N. 5 "function buttons"
- N. 2 dedicated buttons (INSERT - DELETE)
- Encoder for data entry
- USB connector with led
- USB key memory (Eltec format)
- Plate:
 - painted brass
 - black anodized aluminium
- Dimensions: 145 x 84,5 x 60 mm

**The DG25 module includes:**

(reference to the price-list)

N. 1 Board with graphic display and brass/aluminium plate (Code DG25)

N. 2 Key memory (Code KMEM)

N. 1 Shielded round flat cable 26 conductors L = 2,5 m (Code 5016)

11.14 - PLAQUE FOR PEDAL DIVISION

The function of PEDAL DIVISION allows to separate the pedal in two parts (high part, low part) giving each one different stops, unions or couplers.

This plaque allows to select and visualize the DIVISION POINT and, according to the model, to activate the function of PEDAL DIVISION.

MODELS:

ORGDP1	-	Selection and visualization of the DIVISION POINT
ORGDP2	-	Selection and visualization of the DIVISION POINT with button for the activation of the function

SPECIFICATIONS:

- Colour of the led: red
- Buttons + and – for increase and decrease of the division point
- Button for the activation of the function (according to the model)
- Painted brass plaque
- Dimensions: 85 x 36 x 80 mm



11.15 - POCKET FOR MODIFICATION OF THE TABLE P (Code ORGPK)

It is a terminal with keyboards and display LCD that allows to modify the setting of the TABLE P without the help of the computer and of the Orgdrive configuration programme.

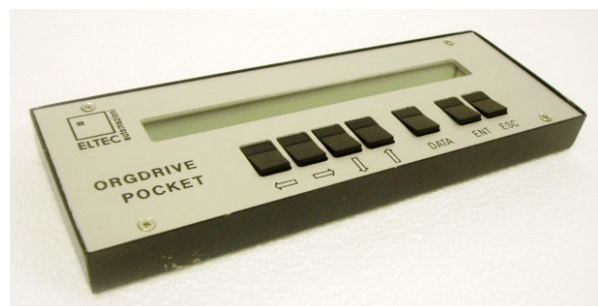
It is possible to set up or modify the data related to the following functions:

- FIXED COMBINATIONS
- TUTTIS
- CRESCENDO
- AUTOMATIC PEDAL
- VENTILS

It is connected to the unit through the connector P2-POCKET that is placed on the front of the unit, on the serial board code ORGVLEM.

SPECIFICATIONS:

- Aluminium box and top panel
- Flat cable connection L = 1,5 m
- Dimensions: 220 x 80 x 20 mm
- Weight: 0,5 kg



12 - CPU CARD OPTIONS

12.1 - TIMER (Code TIM)

The TIMER option consists in the use of two counters that provide with the following information:

1- **HOURS OF WORK OF THE EQUIPMENT**

It visualizes the hours of functioning and it is only increased when the ORGDRIVE system works. This counter, that can be set at zero by the organ-builder, has the function to indicate the hours of real functioning of the organ and it is used to programme periodical maintenance.

2- **TOTAL FROM THE START OF THE EQUIPMENT**

It visualizes the total hours from the starting up of the ORGDRIVE system. It is also increased when the system is switched off. This kind of counter is used both to indicate the time from the delivery of the equipment and to activate the function of ORGAN STOP after a programmed number of days. This counter can't be set at zero.

ORGAN STOP

The function of ORGAN STOP allows the stop of the system after a fixed number of days (these days are also counted when the system is switched off) and can be used to programme maintenances that cannot be postponed, etc.

INTERVAL OF MAINTENANCE

It is possible to programme an interval of time, in hours. After this interval on the digital readouts (or on the control panel) is activated a signal that shows the necessity to intervene for the maintenance. It is possible to programme an interval, in hours, after which on the digital readouts (or control panel) it is activated a signal that means the need to a maintenance intervention.

The TIM option includes:	(reference to the price-list)
N. 1 TIMER integrated circuit installed on the CPU board	

12.2 - EXTENDED MEMORY (Code MES)

The EXTENDED MEMORY option provides a memory of the captures 4 times higher than the standard one.

It is therefore recommended to use in the following cases:

- When you use the control panel DG25 with the subdivision of the total memory area in more passwords (protected memory areas).
- When the console is medium/large, with many stop keys and capture pistons (and variable structure selectors).

It is necessary to replace 2 memories chip on the CPU card and, with the Orgdrive configuration programme, to choose the "Extended Memory" option.

The MES option includes:	(reference to the price-list)
N. 2 Memory chip of extended memory installed on the CPU card	

13 - CODING OF ORGDRIVE SYSTEM

Using the following plan to create the code of ORDGRIVE system:

■ ■ - ■ ■ - ■ - ■ ■ ■ - ■ I ■ ■ ■ - ■ U ■ ■ ■ - ■ P ■ ■ ■ - ■ ■ ■

1 2 3 4 5 6 7 8 9 10 11-12-13

- 1 - **MB:** Transmission system: ON / OFF
 MP: Transmission system: PROPORTIONAL
- 2 - **24:** Model of the rack: 24 TE
 42: Model of the rack: 42 TE
 60: Model of the rack: 60 TE
 84: Model of the rack: 84 TE
- 3 - **M:** Type of system configuration: MASTER
 S: Type of system configuration: SLAVE
 N: Type of system configuration: MULTICABLE
- 4 - **4TS** Keyboard module with hall sensor: max 4 keyboards
 8TS Keyboard module with hall sensor: max 8 keyboards
- 5 - **NUMBER** Input board
- 6 - **120** Type of input board: 120 inputs
 60 Type of input board: 60 inputs
- 7- **NUMBER** Output board on/off
- 8 - **64** Type of on/off output board: 64 outputs
 32 Type of on/off output board: 32 outputs
- 9- **NUMBER** Proportional output boards
- 10 - **120** Type of proportional output board: 120 outputs
- 11 - **MES** Options: Extended memory
- 12 - **TIM** Options: Timer
- 13 - **DG** Connector for DG25 connection

Example: ON/OFF MONOCABLE SYSTEM

Console: 3 manuals + pedal (hall sensor keyboards)
 300 inputs
 200 outputs
 Control panel DG25
 Extended memory
 Organ: 280 on/off outputs

Code of the MASTER system: **MB60M - 4TS - 2I120 - 1I60 - 3U64 - 1U32 - MES - DG**
 Code of the SLAVE system: **MB42 S - 4U64 - 1U32**

14 - EXAMPLES OF INSTALLATION

