PROTOCOL CONVERTER

1019 MODBUS

SOFTWARE DOCUMENTATION

MANUAL No.TM0016
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RIPRODUZIONE VIETATA

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REGISTRATION OF NOTES		
Number	Brief Description of the Contents	Author
1	Preliminary version.	
2	Added data compression function relevant to the states of entities.	
3		
4		
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9		
10		

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1 FOREWORD:

The MOD1019 software is a protocol converter from panels belonging to the 1019 – 1020 series to a Master using the MODBUS protocol. This software does not need any operator interface since its operation is fully automatic; therefore, once it has been started it may keep on working even without a Video and Keyboard. The only operation allowed to the operator is exiting the program by depressing the ESC key. The program runs in MS-DOS environment and can manage as many as three serial communication ports, one for the connection to panel 1019/1020 and two for the connection to the Master (DCS). The two communication ports towards the Master are redundant; therefore the converter is capable of receiving requests from each one of the two ports indifferently. Refer to Manual TM0016 as far as the protocol towards the panel is concerned.

2 THE MODBUS PROTOCOL:

The following functions are implemented as far as the MODBUS protocol is concerned:
• Multiple Bit reading (functions MODBUS 1 and 2)
• Multiple Word reading (functions MODBUS 3 and 4)
• Multiple Bit writing (function MODBUS 15)
• Single Bit writing (function MODBUS 5)
If the converter receives from the master a different message other than those listed above, it will send in reply an error code MODBUS 1 (Invalid function code). A list of flags implemented in this version of the program is attached to this documentation. Such flags are identified by means of abbreviations, since coupling between groups of flags and numerical addresses used by the MODBUS protocol may be configured in the configuration file. If the converter receives from the master a reading or writing message that makes reference to flags totally or partially out of the configured areas, it will send in reply an error code MODBUS 2 (Invalid address field).

3 THE CONFIGURATION FILE:

MOD1019 software bases its operation on the ASCII configuration file CONVERT.CFG. Comments may be included inside this file, as long as they are defined by the fields /* and*/. This file includes four sections, as described hereinafter.

3.1 Section 1 [Porte]

This first section, named [Porte], sets the logical ports and parameters through which the program shall communicate with the panel and the Master. There may be two different types of connection: Serial or Ethernet. The connection (*se 'questa' indicava la connessione; se invece indicava in particolare il tipo Ethernet sostituire con: The latter…*) appears as follows:
[Porte]

Panel-1 COM1 9600 N 8 1 XON /* Connection port to panel 1 */
Panel-2 COM2 9600 N 8 1 XON /* Connection port to panel 2 */
Panel-3 TCP_CONNECT 1500 "217.56.42.222" /* Connection port to panel 3 */
Panel-4 TCP_CONNECT 1500 "217.56.42.223" /* Connection port to panel 4 */
Master-1 COM3 9600 N 8 1 XON /* Connection port to Master 1 */
Master-2 COM4 9600 N 8 1 XON /* Connection port to Master * 2/

The key word Panel-x specifies the connection to panel 1019/1020. Key words Master-1 and Master-2 specify the connection to the Master. The key word Master-2 may be omitted; in this case the program will run with one single port towards the Master. The following parameters are mandatory and identify the type of connection:

In case of serial connections:

Port physical name	may take these values: COM1-COM2-COM3-COM4
Baud Rate	may take these values: 1200-2400-4800-9600-19200
Type of parity	may take these values: N-O-E
Number of datum bit	may take these values: 7-8

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Number of stop bit	may take these values: 1-2
Control of data flow	may take these values: XON-CTS-NONE

In case of connection through an Ethernet network:

Type of connection	
Type of connection	may take these values: TCP_CONNECT or TCP_LISTEN
Address of Logic Port	typically 1500
IP address	IP address of the panel

3.2 Section 2 [config]

This second section, named [Config], sets some general arrangements and appears as follows:

[Config]

Nodo_Modbus	2 /* Number of Modbus hub*/
Timeout_Controllo_Centrali	1 /* Time of panel control in minutes */
Ordine_Stato_entità	NO AL PR AN IS ES NC X1 /* Sequence of entity flags */
Compressione_Stati_Entità	SI /* Compression of states */
Inversione_Stato_Entità	NO /* Inversion of entities logical state */

Nodo_Modbus: this parameter defines the hub number used by the MODBUS master to identify the converter. If many a MODBUS peripheral unit is linked to the master, each one shall be identified with a different hub number.

Timeout_Controllo_Centrali: this parameter defines the time, expressed in minutes, spent by the converter to carry out the presence control on the linked panels. This control is not carried out if the value 0 is inputted. Allowed values range from 1 through 30.

Ordine_Stato_entità: this parameter sets the sequence and number of one-bit flags used to report the state of entities to MODBUS Master. The key words following the parameter determine both the sequence and number; they may be chosen among those listed here below:

NO	Normal.
AL	Alarm/Active.
PR	Pre-alarm.
AN	Anomaly.
IS	Isolated (It groups the states excluded from operator, manual and fault).
ES	Excluded at level 2.
NC	Unknown.
X1	Available for future expansions.

Compressione_Stati_Entità: this parameter is used to enable the compression function of the entities states. When enabled, only the states defined in the Ordine_Stato_entità parameter shall be extrapolated from each entity. N.B.: In this case it is not possible to execute commands relevant to exclusion/inclusion, activation/deactivation and reading of analog values. Extrapolated data will be sequenced starting from the address defined in the flag section, depending on the type of reading that has been set.

Reading by Bit (modbus function 1,2):

In this case the states selected for individual entities (refer to parameter Ordine_Stato_entita) will be sequentially inserted into the reply data as per the example here below:

Ordine_Stato_entita AL PR:

Request of 6 bits starting from address 5000
Reply of a byte

Bit 0	Alarm	5000
Bit 1	Pre-alarm	5000
Bit 2	Alarm	5001

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Bit 3	Pre-alarm	5001
Bit 4	Alarm	5002
Bit 5	Pre-alarm	5002
Bit 6	Insignificant	
Bit 7	Insignificant	

Reading by Word (modbus function 3,4):

In this case each individual word will always contain 16 bits, sequentially corresponding to the states selected for single entities starting from the first entity corresponding to the starting address indicated in the modbus request, as per the example here below:

Ordine_Stato_entita NO AN:

Request of 1 word starting from address 2500
Reply of a word

Bit 0	Normal	2500
Bit 1	Anomaly	2500
Bit 2	Normal	2501
Bit 3	Anomaly	2501
Bit 4	Normal	2502
Bit 5	Anomaly	2502
Bit 6	Normal	2503
Bit 7	Anomaly	2503
Bit 8	Normal	2504
Bit 9	Anomaly	2504
Bit 10	Normal	2505
Bit 11	Anomaly	2505
Bit 12	Normal	2506
Bit 13	Anomaly	2506
Bit 14	Normal	2507
Bit 15	Anomaly	2507

N.B.) Commands and requests for analog values following a relative command are disabled when in this mode. In this case the program will reply with an illegal function error code.

Inversione_Stato_Entità: this parameter is used to set logic values of cumulative states and single entities. Inputting NO will result in setting bits to one when the state is active, inputting SI will result in setting nits to zero when the state is active. Allowed values are SI and NO.

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3.3 Section 3 [Registri]

This third section, named [Registri], is used to set the MODBUS addresses of flag blocks provided by the converter and appears as follows:

[Registri]

```
B    SP    01000 RW    /* Flags of reading/writing Bits for Panels state */
B    CP    04000 RW    /* Flags of reading/writing Bits for commands to panels */
W    SE    05000 RW    /* Reading/writing Word flags for entities state and command */
```

The first key word indicates whether the flags at issue are configured by Bit or by Word, and may take the values B or W. the second key word indicates the type of flag and may take the values SP, CP or SE. The third key word indicates the starting address relevant to the group of flags under consideration, and may be a number ranging from 0 through 65.000.
The fourth key word indicates whether the group of flags is a read only (R), write only (W) or a read/write (R/W). The converter will obviously accept only the type of commands it is configured for. In this example the state flags of the panel are configured as read only Bits and start from the Modbus address 1000; hence SP0 will have address 1000, SP1 will have address 1001 and so on.

3.4 SECTION 4 [ENTITA']:

This fourth and last section of the file, named [Entita], is used to list the entities that the converter shall have to manage. Such entities are defined analogously to what happens in the supervision program Visual-2000, as reported here below:

[Entita]

```
C0   A1   Z1   N1   SC "TEMPERATURE GAUGE "        05000
C0   A1   Z1   N1   IN "PRESS. SWITCH PSH-1 "      05001
C0   A1   Z1   N1    AT "SOLENOID SV-1 "          05002
C0   A1   Z1   N1    AS "ASSOCIATION-1 "          05003
C0   A1   Z2   N1    SA "OPTICAL SMOKE DETEC. "   05004
```

The first column indicates the identification number of the panel, which is a number rangingfrom 1 through 999. The second column indicates the area number that may be either 0. 1 or 2. The third column indicates the entity number, which is a number ranging from 1 through 99. The fifth column indicates the type of entity that may take the values SC (conventional sensor), SA (analog sensor), IN (input), AT (actuator) and AS (association). The sixth column, delimited by apices, represents the name associated to the entity; finally, the seventh column indicates the Modbus address that the entity flags refer to, which is a number ranging from 0 through 65.000.

4 FILES SAVING SITUATIONS:

The converter saves the current whenever a change in the states of the panel occurs. Such situation is saved to the file STATUS.MEM. This expedient allows to save the states even in case of computer shutdown.
When the converter receives a message announcing the beginning of a running cycle, or the cancellation of such file, the state flags of the entities are forced to NORMAL condition.

5 COMPOSITION OF STATE FLAGS:

The composition and meaning of individual Bits in the flags used by the converter is represented here below.

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5.1 State flag of the panel (reading / writing):

Flag	Description
SP0	Panel on line (Code 95)
SP1	Loss of events with the panel (Code 94)
SP2	--- Available for future expansions
SP3	--- Available for future expansions
SP4	--- Available for future expansions
SP5	--- Available for future expansions
SP6	--- Available for future expansions
SP7	--- Available for future expansions
SP8	At least one entity is in Normal state
SP9	At least one entity is in Pre-alarm state
SP10	At least one entity is in Alarm state
SP11	At least one entity is in Anomaly state
SP12	At least one entity is in Isolated state
SP13	At least one entity is in Excluded at level 2 state
SP14	At least one entity is in Unknown state
SP15	At least one entity is in Type X1 state
SP16	Dispersion on power feed voltage (Code 82)
SP17	Power feed failure (Code 83)
SP18	Interrupt always active (Code 84).
SP19	CPU or CPU back-up fault (Code 85)
SP20	Sounders Fault (Code 86)
SP21	Maintenance request (Code 93)
SP22	External Fault (Code 97).
SP23	Failure of the CPU Ram battery (Code 98)
SP24	Error in CPU memory (Code 99)
SP25	Card fault (Code 100)
SP26	Card of different type (Code 101)
SP27	Opening of ESP cards loop (Code 102)
SP28	Short-circuit in ESP cards loop (Code 103)
SP29	Log-on Fault in ESP cards (Code 104)
SP30	Disconnected flat cable in cards DI / DO / H8 (Code 105)
SP31	--- Available for future expansions

N.B.: The summary of the entities state inside the panel is sequentially ordered based on the state configuration of individual entities. The sequence shown in the table is relevant to the configuration used in this example, which is the default one.
The front sixteen flags are read-only ones and represent the state of communication with the panel and the cumulative state of the entities. Flags from SP16 through SP31 reportevents relevant to failures of panel systems. The panel does not send the condition reset message for these bits, therefore it is possible for the master to carry out the reset of such bits. In case the situation arises again, the converter will set back to one the relevant bit. If, on the contrary, the master does not carry out the bits reset, once a failure condition has occurred on a flag, the same flag will remain active till the next start-up of the panel.

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5.2 Flags sending commands to the panel (reading / writing):

Flag	Description
SC0	Request for panel Acknowledgement
SC1	Request for sirens Acknowledgement
SC2	Request for sirens Activation (Evacuation)
SC3	Request for panel Reset
SC4	--- Available for future expansions
SC5	--- Available for future expansions
SC6	--- Available for future expansions
SC7	--- Available for future expansions
SC8	--- Available for future expansions
SC9	--- Available for future expansions
SC10	--- Available for future expansions
SC11	--- Available for future expansions
SC12	--- Available for future expansions
SC13	--- Available for future expansions
SC14	--- Available for future expansions
SC15	--- Available for future expansions
SC16	--- Available for future expansions
SC17	--- Available for future expansions
SC18	--- Available for future expansions
SC19	--- Available for future expansions
SC20	--- Available for future expansions
SC21	--- Available for future expansions
SC22	--- Available for future expansions
SC23	--- Available for future expansions
SC24	--- Available for future expansions
SC25	--- Available for future expansions
SC26	--- Available for future expansions
SC27	--- Available for future expansions
SC28	--- Available for future expansions
SC29	--- Available for future expansions
SC30	--- Available for future expansions
SC31	--- Available for future expansions

The sequence for carrying out a command is as follows:

1. The Master that wants to acknowledge the panel sets bit SC0 to one.
2. The converter, on seeing bit SC0 set to one, sends an acknowledgement command to the panel.
3. When the converter receives from the panel the message notifying “panel has been acknowledged”, it sets bit SC0 to zero.

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5.3 State flag and command of entities (reading and writing):

Flag	Description
SE0	Entity in Normal state –deactivated / bit 0 analog value
SE1	Entity in Pre-alarm state / bit 1 analog value
SE2	Entity in Alarm state –activated / bit 2 analog value
SE3	Entity in Anomaly state / bit 3 analog value
SE4	Entity in Isolated state / bit 4 analog value
SE5	Entity in Excluded state at level 2/ bit 5 analog value
SE6	Entity in Unknown state / bit 6 analog value
SE7	Entity in Type X1 / /bit 7 analog value
SE8	--- Request of entity analog value (valid only if the entity is a Type SA one)
SE9	--- Analog value of an available entity
SE10	--- Request for entity exclusion
SE11	--- Entity excluded
SE12	--- Request for entity activation (valid only if the entity is a Type AT one)
SE13	--- Entity activated
SE14	--- Request not allowed for this type of entity
SE15	--- Available for future expansions

The front 8 bits in these flags are read-only ones and represent either the entity state or its analog value, while the subsequent 8 bits are used to carry out commands on the entities.
In case of associations, Normal-Deactivated or Alarm-Activated are the only allowed states.
The sequence necessary to carry out the request for an analog value from the panel is as follows:

1. The Master wanting to read an analog value sets bit SE8 to one.
2. The converter, on seeing bit SE8 set to one, sends to the panel the command for the request of an analog value.
3. if the entity is not an analog one, the converter sets bit SE14 to one.
4. When the converter receives from the panel the message containing the analog value, it sets bit SE9 to one.
5. At this point the converter, on seeing that SE9 is set to one, reads the analog value on bits SE0-SE7.
4. The panel keeps on updating the value till bit SE8 is set to one.
5. Once completed the reading cycles, the converter sets bit SE8 back to zero.
6. As a consequence the converter, on seeing SE8 set to zero, sets bit SE9 back to zero.
7. From this moment on, the converter begins to input the flags relevant to the entity state back onto bits SE0-SE7.

NB: this table applies only if the compression function of the entity states is disabled.

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6 COMMUNICATION PROTOCOL TOWARDS THE PANEL:

Refer to Technical Manual TM0006 (Communication protocol for series 1019/1020 panels) as far as the communication protocol with the panel is concerned. The summary here below reports the actions carried out by the converter depending on the message received from the Panel or the Commands received from the Master.

6.1 Entity-related event messages :

Message	Actions carried out by the converter
32	Sets to one bit SE0 and to zero the remaining bits. Sets to one bit SP8. Note A
33	Sets to one bit SE2 and to zero the remaining bits. Sets to one bit SP10. Note A
34	Sets to one bit SE1 and to zero the remaining bits. Sets to one bit SP9. Note A
35	Sets to one bit SE3 and to zero the remaining bits. Sets to one bit SP10. Note A
37	Sets to one bit SE4 and to zero the remaining bits. Sets to one bit SP12. Note A
38	Sets to one bit SE4 and to zero the remaining bits. Sets to one bit SP12. Note A
39	Sets to one bit SE4 and to zero the remaining bits. Sets to one bit SP12. Note A
43	Sets to one bit SE5 and to zero the remaining bits. Sets to one bit SP13. Note A
44	Sets to one bit SE0 and to zero the remaining bits. Sets to one bit SP8. Note A
45	Sets to one bit SE0 and to zero the remaining bits. Sets to one bit SP8. Note A
47	Sets to one bit SE0 and to zero the remaining bits. Sets to one bit SP8. Note A
50	Inputs the analog value into bits SE0-/SE7. Sets to one bit SE9.
51	Sets to one bit SE14.
52	Sets to zero bit SE9.
53	Sets to one bit SE14.

Note A: The bits related to the panel state and relevant to the cumulative state of entities are set to one when at least one entity assumes that state, and set to zero when no entity assumes that state.

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6.2 Area-related event messages:

Message	Actions carried out by the converter
60	Sets to one bit SE4 and to zero the remaining bits for all area entities that are type SC-SA-IN. Sets to one bit SP12. Note A
61	Sets to one bit SE4 and to zero the remaining bits for all area entities that are type AT. Sets to one bit SP12. Note A
63	Sets to one bit SE5 and to zero the remaining bits for all area entities that are type SC-SA-IN-AT. Sets to one bit SP13. Note A
66	Sets to one bit SE0 and to zero the remaining bits for all area entities that are type SC-SA-IN. Sets to one bit SP8. Note A
67	Sets to one bit SE0 and to zero the remaining bits for all area entities that are type AT. Sets to one bit SP8. Note A
69	Sets to one bit SE0 and to zero the remaining bits for all area entities that are type SC-SA-IN-AT. Sets to one bit SP8. Note A
72	Sets to one bit SE1 and to zero the remaining bits for all area entities that are type AT. Sets to one bit SP9. Note A
73	Sets to zero bit SE1 and to one bit SE0 for all area entities that are type AT. Sets to one bit SP8. Note A

Note A: The bits related to the panel state and relevant to the cumulative state of entities are set to one when at least one entity assumes that state, and set to zero when no entity assumes that state.

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6.3 Event messages related to the panel in general:

Message	Actions carried out by the converter
80	Sets to one bit SE0 and to zero the remaining bits for all entities defined in the configuration. Sets to one bit SP8 / SP1, and to zero the remaining bits and bits SC0-32. Note A
82	Sets to one bit SP16. Note B
83	Sets to one bit SP17. Note B
84	Sets to one bit SP18. Note B
85	Sets to one bit SP19. Note B
86	Sets to one bit SP20. Note B
87	Sets to one bit SC1. Note B
88	Sets to one bit SC3. Note B
89	Sets to one bit SC7. Note B
90	Sets to one bit SC5. Note B
93	Sets to one bit SP21. Note B
94	Sets to one bit SE6 and to zero the remaining bits for all entities defined in the configuration. Sets to one bit SP1. Note C
95	Sets to one bit SP0. If no reply is obtained after a query, sets SP0 to zero.
97	Sets to one bit SP22. Note B
98	Sets to one bit SP23. Note B
99	Sets to one bit SP24. Note B

Note A: The bits related to the panel state and relevant to the cumulative state of entities are set to one when at least one entity assumes that state, and set to zero when no entity assumes that state.
Note B: The Master must reset these bits whenever they go to 1.
Note C: The flag “loss of events with the panel” indicates misalignment between the converter states and the panel ones. When this flag goes to one it is necessary to start the panel up again in order to re-align the states.

6.4 Even messages related to the panel in general:

Message	Actions carried out by the converter
100	Sets to one bit SP25. Note B
101	Sets to one bit SP26. Note B
102	Sets to one bit SP27. Note B
103	Sets to one bit SP28. Note B
104	Sets to one bit SP29. Note B
105	Sets to one bit SP30. Note B

Note B: The Master must reset these bits whenever they go to 1.

- Management of a parameter enabling the MODBUS protocol data compression.
- Management of the MODBUS protocol data compression according to the following modes:

1) Reading by bit (modbus function 1,2)

In this case the states selected for individual entities (refer to parameter Ordine_Stato_entita) will be sequentially inserted into the reply data as per the example here below.

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Ordine_Stato_entita AL PR
Request of 6 bits starting from address 5000
Reply of a byte

Bit 0	Alarm	5000
Bit 1	Pre-alarm	5000
Bit 2	Alarm	5001
Bit 3	Pre-alarm	5001
Bit 4	Alarm	5002
Bit 5	Pre-alarm	5002
Bit 6	Insignificant	
Bit 7	Insignificant	

2) Reading by word (modbus function 3,4)
In this case each individual word will always contain 16 bits, sequentially corresponding to the states selected for single entities starting from the first entity corresponding to the starting address indicated in the modbus request, as per the example here below.
Ordine_Stato_entita NO AN
Request of 1 word starting from address 2500
Reply of a word

Bit 0	Normal	2500
Bit 1	Anomaly	2500
Bit 2	Normal	2501
Bit 3	Anomaly	2501
Bit 4	Normal	2502
Bit 5	Anomaly	2502
Bit 6	Normal	2503
Bit 7	Anomaly	2503
Bit 8	Normal	2504
Bit 9	Anomaly	2504
Bit 10	Normal	2505
Bit 11	Anomaly	2505
Bit 12	Normal	2506
Bit 13	Anomaly	2506
Bit 14	Normal	2507
Bit 15	Anomaly	2507

NB) Commands and requests for analog values following a relative command are disabled when in this mode. In this case the program will reply with an illegal function error code.

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7 INSTALLATION:

The materials listed here below are requested in order to set a connection between PC Host and PC-104:

- Start-up disc for PC-104
- Serial cables as described in this table:

Serial interface PC-104					Serial interface PC		
Pin	**DB25**	**DB9**	**Signal**	**Function**	**Signal**	**DB25**	**DB9**
2	6	6	DSR	Data Set Ready	N.C.	20	4
3	3	2	RX	Receive Data	TX	2	3
4	4	7	RTS *	Request To Send	N.C.	5	8
5	2	3	TX	Transmit data	RX	3	2
6	5	8	CTS *	Clear To Send	N.C.	4	7
7	20	4	DTR *	Data Terminal Ready	N.C.	6	6
8	22	9	RI *	Ring Indicator	N.C.	22	9
9,10	7	5	GND	Signal Ground	GND	7	5

* As to default modes, connect RTS signal to CTS signal or else DTR signal to RI signal of PC-104 connector.

7.1 Connection:

- Turn off both Pc Host and PC-104.
- Connect Pc Host to PC-104 by means of the serial cable described above.
- Insert the PC-104 start-up disc into the PC Host.
- Turn PC Host on.
- Execute file **STARTVP.BAT**. This batch file runs program VP2000.EXE by selecting options /COM=1 and /A. Run program VP2000 with the options here below in order to execute the program with a different configuration:

[/COM=n][/V][/K][/D][/C][/A]

/COM=1 - uses serial port no. 1 at address 3F8H (IRQ=4)
/COM=2 - uses serial port no. 2 at address 2F8H (IRQ=3)
/COM=3 - uses serial port no. 3 at address 3E8H (IRQ=4)
/COM=4 - uses serial port no. 4 at address 2E8H (IRQ=3)

/V - Reroutes Video
/K - Reroutes Keyboard
/D - Reroutes Disc A:
/C - Reroutes Console (Video + Keyboard)
/A - Reroutes everything (Video + Keyboard + Disc A:)

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• The message here below will appear at the end of this procedure:

Connection on Serial port at 3F8H. (=COM1)
Use PrintScreen Key to EXIT VPLINK...
Take the start-up disc out of Pc Host and **turn PC-104 on**. It is now possible to use PC-104 like a normal PC using the rerouted peripheral units.

• Copy file **MOD1019.EXE** and ModBus configuration file **CONVERT.CFG** onto PC-104.
• Rename file **AUTOEXEC.TXT** to **AUTOEXEC.BAT**.
• Turning PC-104 off and turning it on again will automatically execute program MOD1019.EXE.
• Depress **ESC** key to exit program MOD1019.EXE.

7.2 Examples of configuration files convert.cfg:

This sample file uses the compression of entities state.

```
[Porte]
Panel-3 COM1 9600 N 8 1 XON /* Port which the panel is connected to */
Master-1 COM2 9600 N 8 1 XON /* Primary port which the Master is connected to */
Master-2 COM3 9600 N 8 1 XON /* Secondary port which the Master is connected to */
[Config]
Nodo_Modbus 1 /* Number of modbus hub*/
Timeout_Controllo_Centrali 1 /* Time of panel control in minutes */
Ordine_Stato_Entita AL NO PR AN IS ES NC X1 /* Sequence of entity flags */
Compressione_Stati_Entita SI /* Compression of states */
Inversione_Stato_Entita NO /* Inversion of entities logical state */

[Registri]
B SP 00100 RW /* Reading/writing Bit flags for Panel state */
B CP 01000 RW /* Reading/writing Bit flags for Panel commands */
B SE 00000 RW /* Reading/writing Bit flags for Entity state */
```


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```
[Entita]
C3 A0 Z1 N2 AT "COMMON FAULT REPEAT " 00001 AL
C3 A0 Z1 N56 AT "AREA 01 REPEAT " 00002 AL
C3 A0 Z1 N57 AT "AREA 02 REPEAT " 00003 AL
C3 A0 Z1 N58 AT "AREA 03 REPEAT " 00004 AL
C3 A0 Z1 N59 AT "AREA 04 REPEAT " 00005 AL
C3 A0 Z1 N60 AT "AREA 05 REPEAT " 00006 AL
C3 A0 Z1 N61 AT "AREA 5A REPEAT " 00007 AL
C3 A0 Z1 N62 AT "AREA 06 REPEAT " 00008 AL
C3 A0 Z1 N63 AT "AREA 07 REPEAT " 00009 AL
C3 A0 Z1 N64 AT "AREA 08 REPEAT " 00010 AL
C3 A0 Z1 N65 AT "AREA 09 REPEAT " 00011 AL
C3 A0 Z1 N66 AT "AREA 10 REPEAT " 00012 AL
C3 A0 Z1 N67 AT "AREA 11 REPEAT " 00013 AL
C3 A0 Z1 N68 AT "AREA 12 REPEAT " 00014 AL
C3 A0 Z1 N69 AT "AREA 13 REPEAT " 00015 AL
C3 A0 Z1 N70 AT "AREA 14 REPEAT " 00016 AL
C3 A0 Z1 N71 AT "AREA 15 REPEAT " 00017 AL
C3 A0 Z1 N72 AT "AH3 REPEAT " 00018 AL
C3 A0 Z1 N73 AT "AH4 REPEAT " 00019 AL
C3 A0 Z1 N74 AT "AH6 REPEAT " 00020 AL
C3 A0 Z1 N75 AT "CH2 REPEAT " 00021 AL

C3 A0 Z1 N76 AT "CH3 REPEAT " 00022 AL
C3 A0 Z1 N77 AT "CH4 REPEAT " 00023 AL
C3 A0 Z1 N78 AT "CH5 REPEAT " 00024 AL
C3 A0 Z1 N79 AT "FIRE SECURITY " 00025 AL
C3 A0 Z1 N80 AT "SUBSTATION B " 00026 AL
C3 A0 Z1 N81 AT "LABORATORY " 00027 AL
C3 A0 Z1 N82 AT "CONTROL ROOM " 00028 AL
C3 A0 Z1 N83 AT "SUBSTATION A " 00029 AL
C3 A0 Z1 N84 AT "SUBSTATION C " 00030 AL
C- A- Z- N- SP "SPARE " 00031 -
C- A- Z- N- SP "SPARE " 00032 –
```

The sample file here below DOES NOT use the compression of entities state.

```
[Porte]
Panel-3 COM1 9600 N 8 1 XON /* Port which the panel is connected to */
Master-1 COM2 9600 N 8 1 XON /* Primary port which the Master is
connected to */
Master-2 COM3 9600 N 8 1 XON /* Secondary port which the Master is connected to */
[Config]
Nodo_Modbus 1 /* Number of modbus hub */
Timeout_Controllo_Centrali 1 /* Time of panel control in minutes */
Ordine_Stato_Entita NO AL PR AN IS ES NC X1 /* Sequence of entity
flags */
Compressione_Stati_Entita NO /* Compression of states */
Inversione_Stato_Entita NO /* Inversion of entities logical state */

[Registri]
B SP 09000 RW /* Reading/writing Bit flags for Panel state */
B CP 09001 RW /* Reading/writing Bit flags for Panel commands */
B SE 00000 RW /* Reading/writing Bit flags for Entity state */
```


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```
[Entita]
C3 A0 Z1 N1 AT "COMMON FAULT MIMIC " 00000
C3 A0 Z1 N2 AT "COMMON FAULT REPEAT " 00016
C3 A1 Z1 N1 SC "TANK TK 2001A LHD ACTUAT." 00032
C3 A1 Z1 N2 SC "TANK TK 2001B LHD ACTUAT " 00048
C3 A1 Z1 N3 SC "TANK TK 2001C LHD ACTUAT " 00064
C3 A1 Z1 N4 SC "TANK TK 5001 LHD ACTUAT " 00080
C3 A1 Z1 N5 SC "TANK TK 5002 LHD ACTUAT " 00096
C3 A1 Z1 N6 SC "TANK TK 9004 LHD ACTUAT " 00112
C3 A1 Z1 N7 SC "TANK TK 9005 LHD ACTUAT " 00128
C3 A1 Z1 N8 SC "TANK TK 2001A PB ACTIV. " 00144
C3 A1 Z1 N9 SC "TANK TK 2001B PB ACTIV. " 00160
C3 A1 Z1 N10 SC "TANK TK 2001C PB ACTIV. " 00176
C3 A1 Z1 N11 SC "TANK TK 5001 PB ACTIV. " 00192
C3 A1 Z1 N12 SC "TANK TK 5002 PB ACTIV. " 00208
C3 A1 Z1 N13 SC "TANK TK 9004 PB ACTIV. " 00224
```


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