



D: 10 DIN Rail



82x156mm

## XC1000D SERIES: CONTROLLERS FOR APPLICATIONS UP TO 15 COMPRESSOR/FAN OUTPUTS – SERIAL OUTPUT

- XC1000D series for compressors and condensing fans monitoring and management of medium-large compressor racks
- VISOGRAPH programmable graphic display (LCD – 240x96 pixel)
- Scroll, semi-hermetic, multi stages, with different power and screw compressor management
- Proportional band or dead band control
- Temperature and pressure display depending on the gas (Freon, NH<sub>3</sub>, CO<sub>2</sub> ...)
- Concise information about the variables of the compressor rack through the VISOGRAPH display
- Great versatility and extensive customization opportunities
- 2 analogue outputs for frequency compressors
- 2 analogue outputs for inverter for fans
- Reduced set point for energy saving management
- Hourly run time signals for maintenance
- Dynamic set point for energy saving
- Sub-cooling management
- Last 100 alarm conditions storage and display
- Special algorithms for energy saving
- Standard communication protocol ModBUS-RTU
- Hot key or Prog tool kit connector for a quick and easy programming
- 12VA max power absorption
- Type of refrigerant gas: R22, R134A, R404A, R507, R717
- Resolution 1/100bar, 1/10°C, 1°F, 1PSI

### HOW TO ORDER

XC1000D X C 1 0 0 0 D - 1 B 0 D E

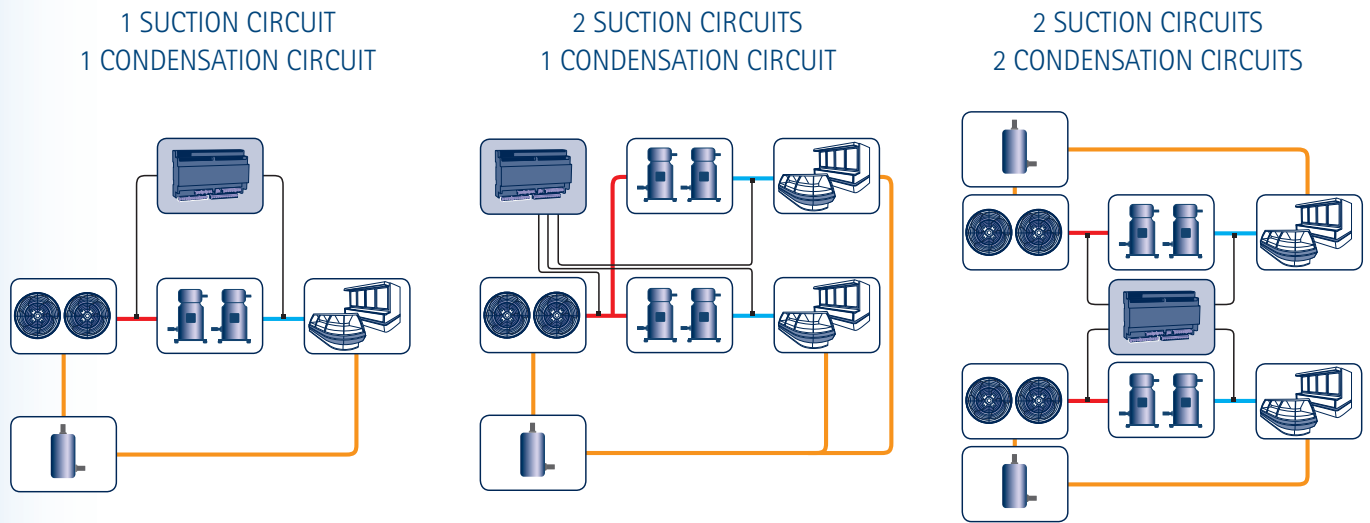
B	D	E
<b>Measurement unit</b>	<b>4÷20mA</b>	<b>Input</b>
C = °C F = °F B = Bar P = PSI K = Kpa	0 = No 1 = Yes	C = NTC D = PTC E = 4÷20mA F = Suction PP11; Delivery PP30 G = Ratiometric

VISOGRAPH V G C 8 1 0 - A B 0 0 0

A	B
<b>Buzzer</b>	<b>Kind of mounting</b>
0 = No 1 = Yes	P = Panel W = Wall

## KINDS OF CIRCUIT

The XC1000D series is able to manage in the best possible way the majority of applications for refrigeration circuits.



## CO<sub>2</sub> REGULATION

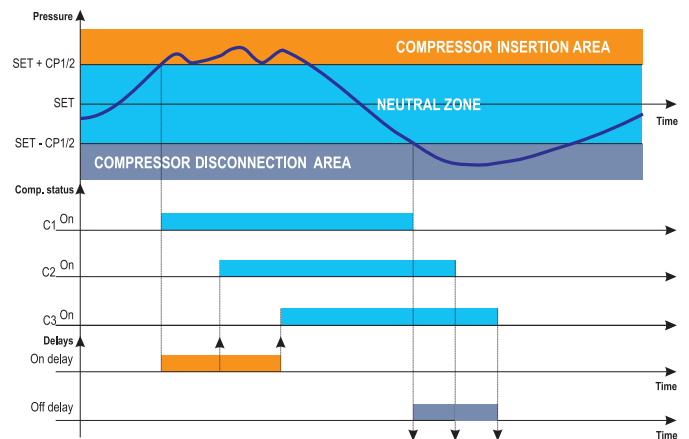
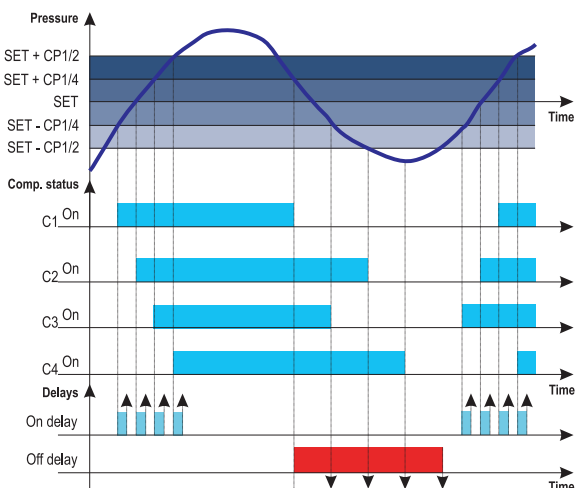
CO<sub>2</sub> use is increasing thanks to the advantages it offers in cooling plants. For this reason there is also a greater demand for accessories. Thanks to special algorithms and an appropriate pressure range, the XC1000D series can manage and monitor CO<sub>2</sub> plants that work in cascade connection with sub-critical cycle.



## STANDARD REGULATION

### NEUTRAL ZONE ADJUSTMENT

A pressure value (set-point) and a band that is symmetric compared with the set value can be programmed. Within this band a state of system equilibrium can exist, where the instrument will maintain the status of the outputs. If the pressure moves outside this band the switching on and off of available outputs begins, subject to delays set in the parameters "delay between two consecutive starts" and "delay between two consecutive stops", always respecting the protection times of each compressor. The graph illustrates, in a simplified way, neutral zone regulation with equal loads.



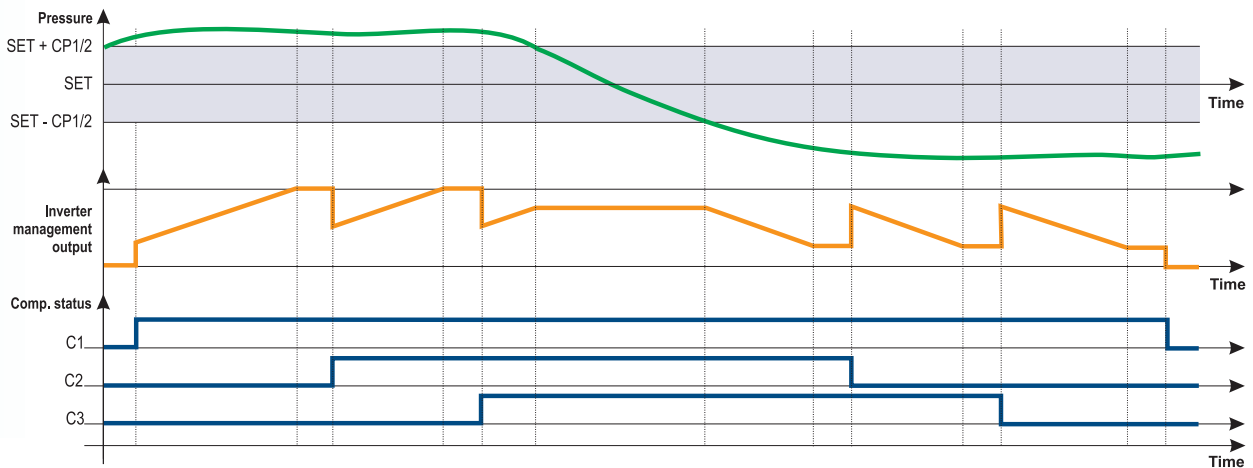
### PROPORTIONAL BAND ADJUSTMENT

A pressure value is set (set point) and an adjustment band is positioned over the set point. The adjustment band is then divided into equal parts, one for each stage being controlled. As the pressure increases and passes the various stages, the controller activates each load. As the pressure decreases, the loads are turned off. In this way, above the adjustment band all the compressors will be running, while below the band they will all be off. The switching on and off of the loads is carried out in such a way as to balance the running hours. The graph shows, in a simplified way, the adjustment algorithm with 4 equal loads.

## ENERGY SAVING MANAGEMENT

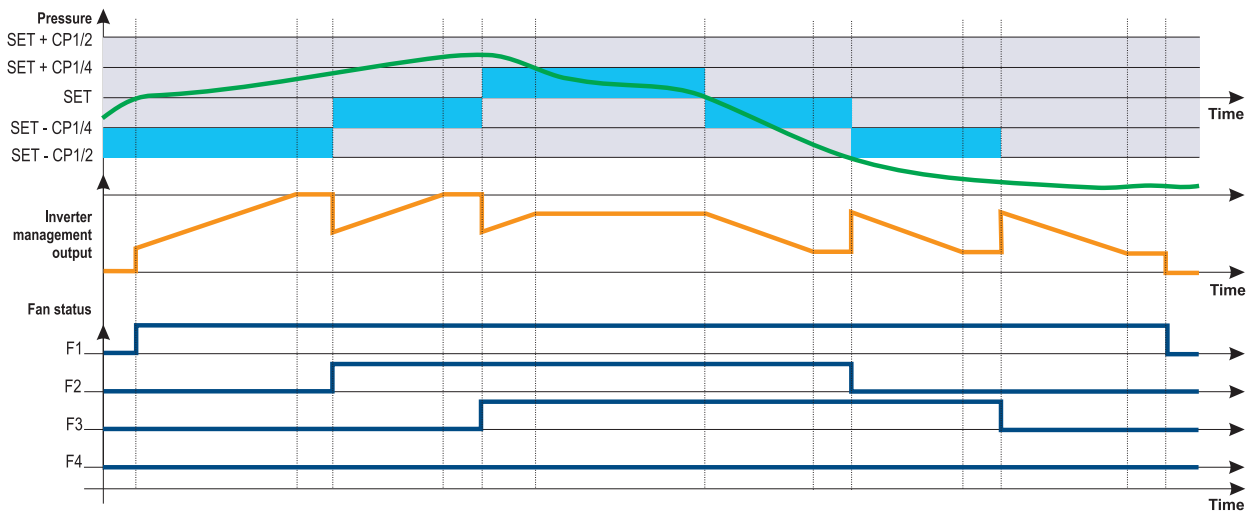
The new XC1000D series gives to the user several solutions that let you to manage energy savings, so important when we deal with "compressor management". The controllers have a special algorithm that lets you to optimize the efficiency of the plant, ensuing energy savings. The following are a range of the most important solutions that Dixell offers to customers to achieve energy savings.

### COMPRESSORS WITH INVERTER



When the plant needs more power (when the temperature gets out of the band) the inverter compressor (C1) frequency increases. If this is not enough, the other compressors (C2, C3, ...) will be activated in sequence. At the same time the controller will modulate the inverter compressor frequency in order to have a uniform increase of the plant power.

### FANS WITH INVERTER

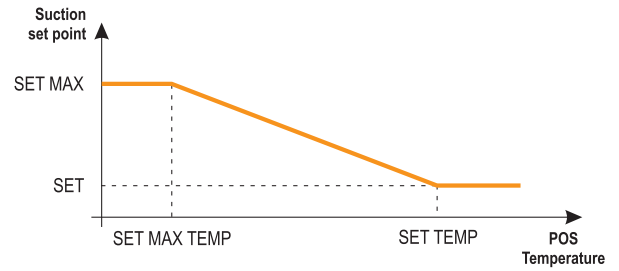


When the plant needs more power (when the temperature gets out of the band) the inverter fan (F1) frequency increases. If it is not enough, the other fans (F2, F3, ...) will be activated in sequence. At the same time the controller will modulate the inverter fan frequency in order to have a uniform increase of the plant power.

## SUCTION DYNAMIC SET POINT

**Suction temperature/pressure optimization can depend on retail space temperature.**

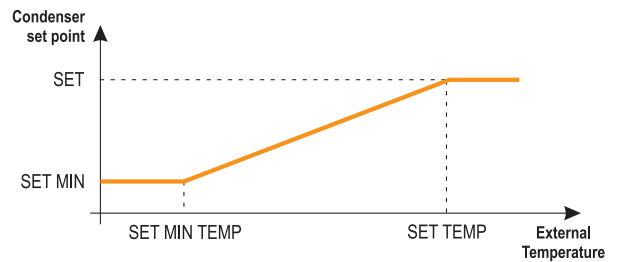
The dynamic set point guarantees excellent plant efficiency, considering the real operational conditions. The plant modifies the suction temperature/pressure according to the retail space temperature so the refrigeration power changes depending on the real thermodynamic exchange.



## CONDENSER DYNAMIC SET POINT

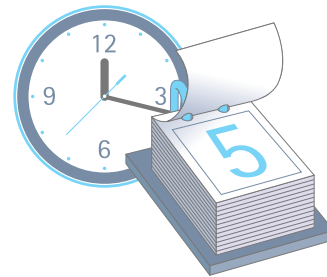
**Condenser temperature/pressure optimization can depend on the external temperature.**

The condenser temperature/pressure is modified according to the external temperature. The condensing set point is automatically adjusted according to the external temperature, to get an optimum condensing temperature.



## REDUCED SET POINT

An internal 7 day clock can automatically change the adjustment's set point, depending on a particular system's individual requirements, to enter an energy saving cycle during nights and weekends, when less power is required. This energy saving cycle can also be initiated from an external source via a digital input.



## SUPERVISION SET

The connection to the modern supervising systems (of Dixell) allows, thanks to the CRO special algorithm (Compressor Rack Optimization), to manage in the best way the compressor rack set point depending on the devices connected, with the result of having an optimized energy saving on the plant. The system, equipped with the CRO function, analyzes the information from the controller in the application to determine if a controller needs more refrigeration power and the quantity. The set point will be re-calculated in order to satisfy the worse instance and sent from the supervising system to the XC1000D; this will be the working set point (fig. 1). If the supervising system can't manage the XC1000D, is the controller that "decided" to replace the set point (coming from the system) and will then define the set point in the program phase.

The 2 graphs (fig. 2) emphasize that when the CRO algorithm is active, in a real installation, the set point becomes on average higher, and consequently the energy consumption decreases. The dotted line represents the average weekly value.

fig. 1

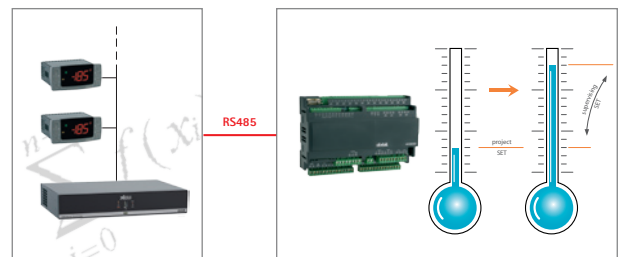
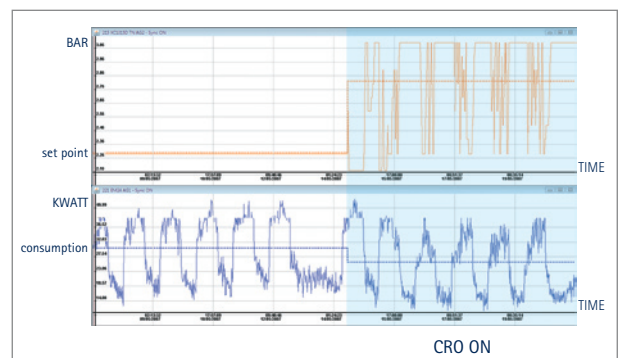


fig. 2



# XC1000D

## ADVANCED CONTROLLERS for the SIMULTANEOUS MANAGEMENT of UP to 8 COMPRESSORS and FANS



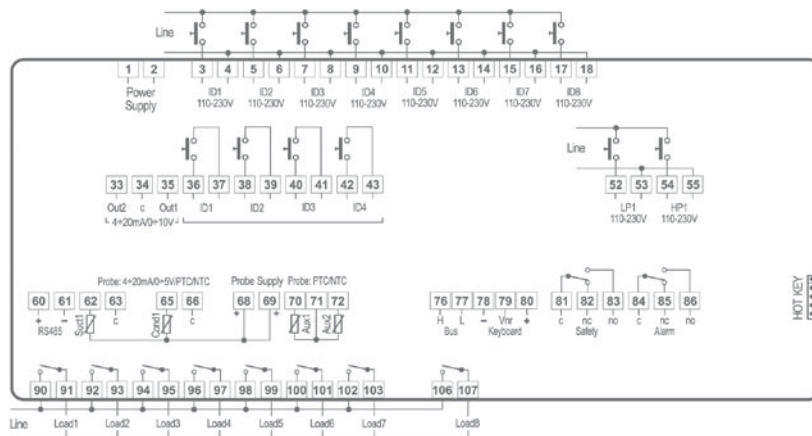
D: 10 DIN Rail

XC1008D

Advanced digital controller for compressor racks with up to 8 compressors and fans simultaneous management

FEATURES	XC1008D
<b>Power supply</b>	24Vac/dc (from TF10D)
<b>Probe inputs</b>	
Suction 1	NTC/PTC/4÷20mA/0÷5V
Suction 2	
Condensing 1	NTC/PTC/4÷20mA/0÷5V
Condensing 2	
Auxiliary 1	NTC/PTC
Auxiliary 2	NTC/PTC
Auxiliary 3	
Auxiliary 4	
<b>Digital inputs</b>	
Low pressure switch 1 (main voltage)	pres
Low pressure switch 2 (main voltage)	
High pressure switch 3 (main voltage)	pres
High pressure switch 4 (main voltage)	
Safety loads (main voltage)	8
Free of voltage	4 config
<b>Relay outputs</b>	
Loads	8 x 7A config
Alarms	2 x 8A
<b>Other</b>	
Hot Key/Prog Tool Kit output	pres
Remote display output	VGC810
Serial output	RS485
Inverter compressor output	4÷20mA/0÷10V opt
Inverter fan output	4÷20mA/0÷10V opt
Buzzer	on keyboard opt
External module connections	LAN opt

### XC1008D



# XC1000D

## ADVANCED CONTROLLERS for the SIMULTANEOUS MANAGEMENT of UP to 15 COMPRESSORS and FANS



D: 10 DIN Rail

**XC1011D**

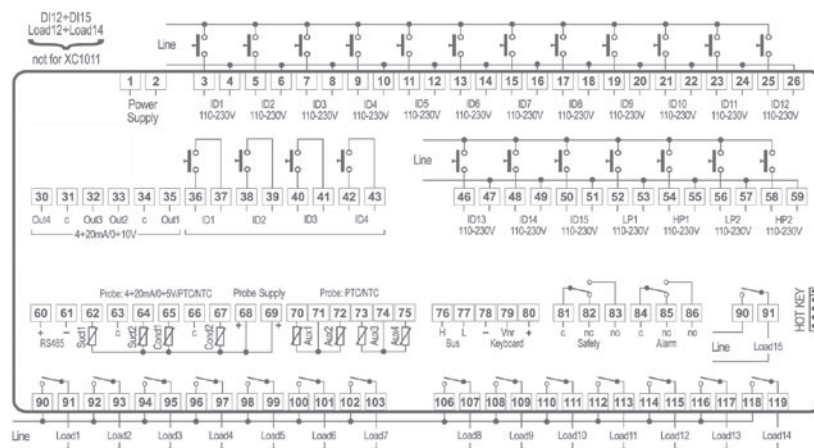
Advanced digital controller for compressor racks with simultaneous management up to 11 compressors and fans

**XC1015D**

Advanced digital controller for compressor racks with simultaneous management up to 15 compressors and fans

FEATURES	XC1011D	XC1015D
<b>Power supply</b>	24Vac/dc (from TF20D)	24Vac/dc (from TF20D)
<b>Probe inputs</b>		
Suction 1	NTC/PTC/4÷20mA/0÷5V	NTC/PTC/4÷20mA/0÷5V
Suction 2	NTC/PTC/4÷20mA/0÷5V	NTC/PTC/4÷20mA/0÷5V
Condensing 1	NTC/PTC/4÷20mA/0÷5V	NTC/PTC/4÷20mA/0÷5V
Condensing 2	NTC/PTC/4÷20mA/0÷5V	NTC/PTC/4÷20mA/0÷5V
Auxiliary 1	NTC/PTC	NTC/PTC
Auxiliary 2	NTC/PTC	NTC/PTC
Auxiliary 3	NTC/PTC	NTC/PTC
Auxiliary 4	NTC/PTC	NTC/PTC
<b>Digital inputs</b>		
Low pressure switch 1 (main voltage)	pres	pres
Low pressure switch 2 (main voltage)	pres	pres
High pressure switch 3 (main voltage)	pres	pres
High pressure switch 4 (main voltage)	pres	pres
Safety loads (main voltage)	11	15
Free of voltage	4 config	4 config
<b>Relay outputs</b>		
Loads	11 x 7A config	15 x 7A config
Alarms	2 x 8A	2 x 8A
<b>Other</b>		
Hot Key/Prog Tool Kit output	pres	pres
Remote display output	VGC810	VGC810
Serial output	RS485	RS485
Inverter compressor output	2 x 4÷20mA/0÷10V opt	2 x 4÷20mA/0÷10V opt
Inverter fan output	2 x 4÷20mA/0÷10V opt	2 x 4÷20mA/0÷10V opt
Buzzer	on keyboard opt	on keyboard opt
External module connections	LAN opt	LAN opt

XC1011D  
XC1015D



# VISOGRAPH

## PROGRAMMABLE GRAPHIC DISPLAY



82x156mm

VGC810

Programmable graphic display (LCD – 240x96pixel) for XC1000D controllers

### FEATURES

VGC810

#### For models

XC1008D  
XC1011D  
XC1015D

#### Power supply VISOKEY output

from controller  
pres

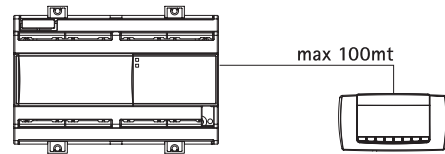
#### Buzzer

opt

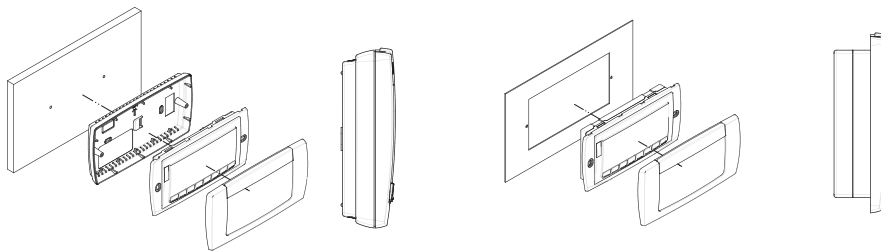
#### Mounting

wall or panel

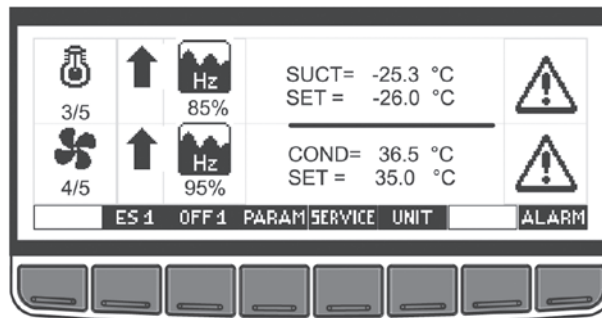
- Great versatility and extensive customization opportunities
- IP65 front protection
- Keyboard lock function
- Easy programming through VISOKEY



VISOGRAPH keyboards can be wall or panel mounted



VISOGRAPH keyboards instantly provide complete information about the machine variables



## VISOKEY

Key to transfer programs on VGC810 keyboard

