

Engineering Note

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Title:	Hydro-View firmware variants
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Summary:	This note describes how the firmware in the Hydro-View unit has changed since the product was originally launched.

Introduction

This note describes how the firmware in the Hydro-View unit has changed since the product was originally launched. In general, the Hydro-View may be upgraded to the current standard by replacement of the system EPROM - this document will highlight where other modifications may be necessary. If in doubt, refer to your supplier.

Note that the Hydro-View user guide may not match the current revision of firmware supplied. This situation is particularly true where new issues have been made to support additional languages as in this instance a revision to the user guide will not normally be made.

To simplify reading this, the most recent changes made for current releases are document first, followed by a history of earlier revisions.

Identification of firmware version

The Hydro-View will display the current version of firmware installed for a few seconds when power is applied. This will be of the form HS0007 Vx.xx or HS0016 Vx.xx where...

HS0007 is the firmware product code for Hydro-View models shipped prior to 1st January 1996.
HS0016 is the firmware product code for Hydro-View models HV02 shipped post 1st January 1996 fitted with Variotronix display modules.
HS0020 is the firmware product code for Hydro-View models HV02 shipped post 1st January 1996 fitted with Hyundai display modules and backlighting.
Vx.xx is the version number of the firmware, x.xx being substituted accordingly.

Due to hardware differences between earlier Hydro-View units and model HV02 types, HS0016 and HS0020 EPROMs cannot be used in non-HV02 model units and vice versa.

The first digit of the version number will only change where major new features have been added to the system and incompatibilities may result. The digits after the decimal point indicate that minor features have been added and/or error corrections have been made.

Software options

Some customers have requested special facilities in the Hydro-View. Such facilities are available as a software option within the EPROM and should be specified at the time of ordering in addition to the main part number described above. Options announce themselves on the start-up display. Those available are currently...

HS0021 Provides 25Hz basic sensor sampling rate rather than 10Hz.

Thus specifying EPROM type HS0020 + HS0021 is an EPROM for a HV02 unit fitted with Hyundai display and 25Hz sampling rate.

Hydro-View firmware current release - V2.08 - 20/10/97

Calibration error

Change made in V2.07 to calibration calculation was not completely effective. This has now been fixed.

Revision history

V1.01 - 1/2/94

Support for periodic data logging operation which outputs NOW and AVERAGE moisture values at 1 second intervals on the RS232 port (port parameters 9600, n, 8, 1).

V1.10 - 23/2/94

Includes support for multiple material calibrations & remote selection via digital I/O. Supports multiple languages although some facilities are in English only.

V1.11 - 1/3/94

Modified to provide Hydro-Control IV test facility. Analogue output can now output the clipped sensor voltage, allowing the Hydro-View to simulate a sensor with clipping already applied. Not released into production units.

V1.12 - 5/5/94

Analog output calibration facility added.
Turkish language added.

V1.13 - 16/10/94

Synchronised input facility added as sensor type 2 using average/hold input. All displays involving average/hold are inhibited by selecting type 2. This is intended for development of mixer applications only and may be changed in future issues.

Negative moisture displays now implemented. This overcomes the problems of using SSD values which lead to negative values.

This version was never formally issued due to some minor errors in negative value handling.

V1.14 - 6/1/95

Errors in V1.13 corrected.

Sensor type 3 can be used to perform high-speed (100Hz) conversions out to the RS232 port. This has been used to capture traces from mixer sensors on trial sites. The data is output as a hex value. Support for Variotronics display added due to Toshiba type being discontinued. The system defaults to Toshiba, which looks incorrect when the Variotronics display is used. This is fixed by pressing the YES (TICK) key when FACTORY DEFAULTS is selected. The display is then adjusted and the value stored in non-volatile RAM. Note that if Variotronics is selected inadvertently, pressing the NO (CROSS) key will restore the Toshiba setting.

V1.15 - 9/1/95

Minor error fixed to prevent average value changing until average/hold timer has expired. In previous issues it would track the NOW value between the average/hold line going active and the timer expiring.

No need to set the display type (see V1.14) as this is now automatic.

2.0B - 25/4/95

Beta test version only includes following additions...

- Bi-directional serial comms (ASCII HEX) protocol added.
- Support for both RS232 and RS485 communications ports. Note that RS485 requires additional hardware to be installed.
- Data logging rate can now be set from front panel.
- Support for averaging sensors via communications ports.

- Sensor trend display now performed as a background task with programmable intervals.
- Digital inputs now configurable for function.
- Digital input can be configured as a 'low-level' input to prevent averaging when no material is present.
- Averaging does not take place when sensor is in alarm condition.
- Keypad bleeper provides audible alarm.
- Minor errors on data logging format (negative numbers) fixed.

2.00 - 24/8/95

Formal release version.

RS232/485 Communications

Serial port operations can be selected from the following list...

<i>None</i>	Serial port not used
<i>Datalog</i>	Outputs moisture value (instantaneous and average) periodically with adjustable rate.
<i>ASCII Hex</i>	Bi-directional protocol as defined in EN0005. Allows setting of material number and reading of moisture values.
<i>MASTER</i>	Hydro-View provides an average of itself and up to 3 (using RS485) additional Hydro-Views connected together. Using RS232 to connect two Hydro-Views with one configured as a Master and the other as ASCII Hex, the average of two moisture channels can be generated. The values produced by these combinations are as follows... M1 - Instantaneous average of relevant moisture channels not in alarm. M2 - Instantaneous average of relevant moisture channels which are currently 'batching'. Avg - Integration and time average of relevant moisture channels which are currently 'batching'. This is computed to give the most useful value and ignores periods for which a single sensor may be in alarm or with a low material level condition. The moisture display on a MASTER station can be toggled between the local moisture readings and the group average using the F3 key.
<i>RS485 Watch (RS232 only)</i>	Allows the RS232 port to monitor bidirectional traffic on an RS485 network in conjunction with a PC. For installation and test purposes only.
<i>Sensor Trace (RS232 only)</i>	Outputs the raw sensor signal at 100Hz as an ASCII Hex string. For installation and test purposes only.
<i>Batch print</i>	Produces an output report at the end of each batch as determined by transition on Average/Hold.

Both ports can be active at the same time, although configuring both ports as Master will give erroneous readings.

A communications diagnostic display is provided.

Access codes

A simple access code system has been introduced to prevent unauthorised changes to configuration information and to simplify use by hiding infrequently used options.

The pass-codes (four access levels) are currently fixed and will be documented in the handbook. A 'distributor id' extension of this system allows the inclusion into the firmware of a single page graphic display which can be incorporated into the EPROM for display at system start-up. Further details of this will be available shortly.

See also 2.0B above for additional functionality.

2.01 - 24/10/95

Set-point outputs

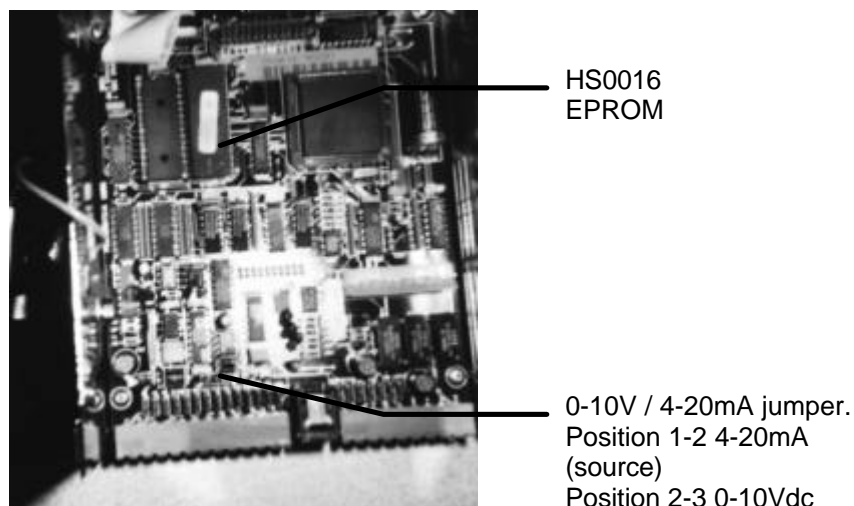
An error was introduced during the final development of version 2.00 which caused the set-point outputs to fail to operate as intended. This has been fixed. Earlier versions were not affected by this problem.

Model HV-02 - 1/1/96

This revision to the Hydro-View was launched to meet European EMC requirements. Due to hardware differences, the EPROM part number has been changed to HS0016 although revision numbers have been maintained.

The major hardware differences are summarised in the table below...

<i>Display contrast adjustment</i>	Can now be performed from the front panel by pressing the X key in a default display. This causes the contrast to be adjusted to one of sixteen different preferences according to operating environment.
<i>4-20mA analogue output option</i>	In addition to the 0-10V output, a 4-20mA output is available. This is selected by an internal jumper setting as indicated in the photograph.
<i>Plug-in RS485 option</i>	This can be added at any time. The earlier model needed this installing at the factory.
<i>Plug-in internal fusing</i>	Designed to protect the Hydro-View unit from external wiring faults inputs/outputs.
<i>Plug-in screw terminal blocks Isolation</i>	All field connections are now made via plug-in screw terminals. Sensor input, serial ports and digital inputs and outputs now individually isolated to help prevent problems due to common impedances and bad grounding. Analogue output and internal excitation supply share a common ground, but these remain isolated from other circuits.
<i>Internal voltage selection</i>	Mains operating voltage is selected internally via push-on connectors.
<i>Factory functional test option</i>	Firmware includes built-in test facility for checking operation of all ports.



The HV02 model was launched with firmware version HS0016 V2.01.

V2.02 - 18/01/96

Non-English language selection

Some difficulties with languages in version 2.01 were fixed. English operation unaffected by this problem.

V2.03 - 8/02/96

Languages

Italian language added.
Some outstanding translations in other languages added.

List editing

A minor problem with list editor pop-up boxes was fixed.

RS485 interface

The RS485 interface port is now initialised correctly at start-up. This did not affect earlier models of Hydro-View but model HV02 sometimes fails to initialise the receiver in versions 2.01 and 2.02.

V2.04 - 1/3/96

Languages

Korean translations added for main displays and menu items.

V2.05 - 12/7/96

HS0020 part number introduced

A new display module has been introduced which provides back-lighting facilities. The hardware differences between the displays require that an additional EPROM type is introduced. Customers requesting upgrades must be careful to specify the existing software part number which is indicated on the start-up display.

Software option facility introduced

Some customers have requested special facilities in the Hydro-View. Such facilities are available as a software option within the EPROM and should be specified at the time of ordering.

Contrast control

This facility has been improved slightly.

V2.06 - 26/07/96

Sensor Trace

This diagnostic facility had been inadvertently removed and has now been reintroduced.

V2.07 - 27/2/97

Calibration error

Change made to calibration calculation to avoid a rounding error which might lead to a small error in the displayed value.
