



NETBRICKS

V5-BRICKS

INTRODUCTION

NETBRICKS *V5-BRICKS* is a portable software package implementing the V5 protocols in Access Networks (AN) and in Local Exchanges (LE).

V5-BRICKS is fully compliant with ITU-TS recommendations : Q.964, G.965 and with ETSI standards : ETS 300 324, ETS 300 347 and EN 300 324, EN 300 347.

V5-BRICKS supports PSTN User Ports and ISDN Basic Rate Access (BRA) and Primary Rate Access (PRA) User Ports.

V5-BRICKS architecture is based on NETBRICKS architecture using object oriented design and a message passing mechanism for inter-entity communication. *V5-BRICKS* is designed to process a rough synchronous byte stream or to support HDLC controller. Interfaces to most of commercial RTOS are provided : AMX, Nucleus, PSOS+, RTC, VRTX, WxWorks, ...

V5-BRICKS is addressed to the OEM market. Netbricks can develop any custom product based on *V5-BRICKS* technology according Customer's specifications.

FEATURES

V5-BRICKS consists of the following main software entities :

- ❑ DL : Data Link (LAPV5) and Envelope Function (EF),
- ❑ V5 : V5 entity with the following protocols and Finite State Machine :
 - ❑ Control
 - ❑ PSTN
 - ❑ BCC (V5.2)
 - ❑ Link (V5.2)
 - ❑ Protection (V5.2)

PH implements BRI layer 1 :

- ❑ MPH and PH : Physical Framer and Transceivers and HDLC drivers with an optional HDLC by software solution,
 - ❑ "F" User side Finite State Machine,
 - ❑ "G" Network side Finite State Machine,
 - ❑ "J" Digital Section Finite State Machine,
 - ❑ "ET" End Termination Finite State Machine,
 - ❑ Alarm reporting,
 - ❑ Statistics reporting,
 - ❑ Provisioning and re-provisioning,
 - ❑ Support of
 - ◆ Dallas Semiconductor : 2152 (T1), 2154 (E1), 21x52 (T1), 21x54 (E1)
 - ◆ Infineon : FALC (E1, T1, J1), QUAQ-FALC (E1, T1, J1), ACFA/IPAT (E1, T1)
 - ◆ Mitel MT8930 (So/To), MT89790 (E1), MT9079 (E1)
 - ◆ PMC-Sierra : Comet (E1/T1)
- ❑ Standard : I.431 (E1), ANSI T1

PH implements for a synchronous full duplex bit stream :

- ❑ Frame delimitation (HDLC frame),
- ❑ HDLC bit stuffing and un-stuffing,
- ❑ CRC16 calculation and error detection,
- ❑ Error Rate Monitoring (Alignment and Normal),
- ❑ Provisioning and re-provisioning,
- ❑ PH and Management APIs,
- ❑ Support of :
 - ◆ Infineon ISAC-S, IPAC, FALC, ESCC2, ESCC8, Munich-32, HSCX,
 - ◆ Motorola MC683xx, PowerQUICC I and II
 - ◆ PMC-Sierra : Comet
- ❑ Standard : ISO HDLC 3309

Data Link (DL) implements the following functions :

- ❑ Core DL,
- ❑ DL Finite State Machine
- ❑ Error correction,
- ❑ Provisioning and Re-provisioning,

- ❑ Standards : ITU-TS Q.921, G.964, ETSI ETS 300 324

V5 PSTN (PSTN) implements the following functions :

- ❑ PSTN Signal Information Element
- ❑ Path management
- ❑ PSTN Finite State Machine (FSM)
- ❑ Provisioning and Re-provisioning,
- ❑ Standards : ITU-TS Q.964 clause, ETSI ETS 300 324 clause 13.

V5 Control (CTRL) implements the following functions :

- ❑ ISDN User Port status indication and control protocol
- ❑ ISDN User Port Finite State Machine
- ❑ PSTN User Port status indication and control protocol
- ❑ PSTN User Port Finite State Machine
- ❑ Provisioning and Re-provisioning,
- ❑ Standards : ITU-TS Q.964 clause 14 Q.965 clause 15, ETSI ETS 300 324 clause 14.

V5 Link maintenance (LINK) implements the following functions :

- ❑ Link Blocking and unblocking,
- ❑ Link Identification,
- ❑ Link Control Finite State machine,
- ❑ Provisioning and Re-provisioning,
- ❑ Standards : ITU-TS Q.965 clause 16 ITU-TS, ETSI ETS 300 347 clause 16.

V5 Bearer Channel Connection (BCC) implements the following functions :

- ❑ Allocation de-allocation of bearer channels,
- ❑ Audit of bearer channels,
- ❑ BCC Finite State machine,
- ❑ Provisioning and Re-provisioning,
- ❑ Standards : ITU-TS Q.965 clause 17, ETSI ETS 300 347 clause 17.

V5 Protection (PROTECTION) implements the following functions :

- ❑ Switch over of Communication paths,
- ❑ Management of C-channels,
- ❑ Protection Finite State machine,
- ❑ Provisioning and Re-provisioning,
- ❑ Standards : ITU-TS Q.965 clause 18, ETSI ETS 300 347 clause 18.

- System management entity SM with V5 management API (UMA)
- Layer 1 drivers :
 - MPH Link Physical management entity (line interface)
 - PH-C Communication channel entity (HDLC) :
 - ◆ HDLC Interrupt Service Routine.
 - ◆ PH-C entity
- V5 stack :
 - DL entity (LAPV5 and EF)
 - V5 V5 entity with the following sub-entity :
 - PSTN
 - CTRL
 - LINK
 - BCC
 - PROTECTION
- API :
 - API-SERVER entity

V5-BRICKS SOFTWARE ARCHITECTURE

